

† An Attempt towards a Systematic Classification of the Family *Ascalaphidæ*. By R. M'LACHLAN, F.L.S., Sec. Ent. Soc.

[Read May 4, 1871.]

FOR some years I have been collecting materials with the hope that I might some day publish a monograph of this interesting Neuropterous family; but the difficulty of defining the limits of species, owing to their innate tendency to variation, and the absence, in many cases, of one sex, prove to me the impossibility of, at present, writing an exhaustive work. Collectors generally have paid very little attention to these insects; and without an examination of an extensive series from different localities, a safe generalization on specific forms could not be attempted. I have therefore drawn up the present paper as a sketch of my present knowledge of the family, and as an assistance to myself and others in investigating it.

A glance may here be taken at the progress made in the study of these insects. Linné, at the time of publication of the 12th edition of the 'Systema Naturæ,' knew of only two species, which he placed with *Myrmecleon*. A few years previously, and afterwards, such competent entomologists as Scopoli and the authors of the 'Wiener Verzeichniss,' deceived by external form, described two of the gay-coloured South-European species as *Papilios*.

The genus *Ascalaphus*, which is synonymous with the family as it now stands, was instituted by Fabricius in his 'Systema Entomologiæ,' in 1776, and at the time of publication of the second volume of the 'Entomologia Systematica,' in 1793, he indicated six species, and one more in his 'Supplement' in 1798.

For a long time the progress was scarcely evident. Burmeister, in 1839, in his 'Handbuch der Entomologie,' enumerates only eighteen species as then known to him. In this work is what was probably the first attempt at dividing the old genus *Ascalaphus* into sections; and Burmeister in one instance indicates a divisional name (*Haploglenius*), which has since been adopted for a genus.

In 1842, Lefebvre, in Guérin's 'Magasin,' made the first essay at a generic splitting-up of *Ascalaphus*, and divided it into ten genera, under the names *Ptynx*, *Azesia*, *Amœa*, *Theleproctophylla*, *Proctarrelabris*, *Ascalaphus*, *Hybris*, *Acheron*, *Orphne*, and *Suphalasca*. This short paper shows great research and an

intimate knowledge of the structure of the family; but in most cases he grouped many, and often discordant forms as divisions of his genera, without indicating any special generic type; hence I have been compelled to an arbitrary adaptation of his views to the present state of our knowledge, carefully preserving, however, his names, and applying each to some one of the divisions he bracketed together under it.

Lefebvre, in the paper just examined, announced his intention of publishing a monograph of the group. I have every reason to believe that this was really completed in MS., and the illustrations prepared, and that it still exists in the possession of his family; yet, from some cause or other, it was never published, though its writer lived for at least twenty-five years after making known his intention. The fact of its non-publication is much to be deplored.

Also in 1842 appeared the volume of the 'Nouvelles Suites à Buffon,' comprising Rambur's 'Histoire Naturelle des Névroptères. His "Ascalaphides" are divided into nine genera, viz. *Ascalaphus*, *Theleproctophylla*, *Puer*, *Bubo*, *Ulula*, *Cordulecerus*, *Colobopterus*, *Byas*, *Haploglenius* (nec Burm.), and *Azesia*. From the almost simultaneous appearance of Lefebvre's and Rambur's arrangement a risk of confusion ensued; but that this was obviated is proved by the fact that Rambur criticises, and in some respects adopts, Lefebvre's views. Rambur enumerates and describes thirty-one species.

In 1848 Westwood, in the 'Cabinet of Oriental Entomology,' indicated a group under the name *Ogcogaster*.

In 1853 Walker completed the second part of the 'List of Specimens of Neuropterous Insects in the Collection of the British Museum;' including forty-one described in that work as new, he enumerates eighty-one species, placing them all under *Ascalaphus*, but indicating divisions. Like all the other Catalogues by this author, this shows an immense amount of bibliographical research, and as a compilation is very valuable; but, like them also, it proves the author's incapacity for discriminating species or groups; and, as a consequence, many of his names sink as synonyms of his own or previously described species. The descriptions are generally good, often excellent; but there is no appreciation of affinities, and the whole work bears the impress of mechanical effort.

In 1860 Hagen published, in the 'Stettiner entomologische

Zeitung,' a synonymic list of the species of the restricted genus *Ascalaphus*. In 1866 the same author brought forward his 'Hemerobidarum Synopsis Synonymica' in the same publication. His generic synopsis of the family contains no new elements, and is an attempt at grouping the described species under the generic divisions already indicated by Burmeister, Lefebvre, Rambur, and Westwood. As a laborious compilation and index-list of names, this work is invaluable; but I have been unable to adopt the author's views in many cases. It was intended only as a starting-point, and, as such, admirably serves its purpose.

In 1868 Brauer, in the 'Verhandlungen der kais.-königl. zoologisch-botanischen Gesellschaft in Wien,' published his "Verzeichniss der bis jetzt bekannten Neuropteren im Sinne Linné's; erster Abschnitt." His arrangement of the family is only an echo of that of Hagen.

My examination of the family has resulted in its division into twenty-seven generic groups, including several forms not hitherto noticed. It may possibly be objected that I have carried subdivision to too great a length. To this I would reply that without doubt a still greater disintegration will become necessary. It must be remembered that a knowledge of almost any Neuropterous family may be considered half a century behind that of the more favoured orders, such as Coleoptera, where subdivision has been carried to great minuteness of distinction. And, for my part, I would decidedly express myself in favour of minute subdivision, rather than of the principle of retaining numerous species under one generic heading. Few, I imagine, now believe in the existence of groups sharply defined by nature, and equal in value, such as formed the ideals of the older authors; and, granting this, it is to me a far greater aid to memory to have many groups, each with a special name, than to be put to the inconvenience of retaining in memory the characters of multitudinous unnamed sections of one large genus: in the former case the name recalls the characters; in the latter the sections, indicated probably by numbers or signs, mix themselves inextricably.

An attempt to arrange the described species under the new generic divisions, and a recapitulation of twenty-three species diagnosed as new, results in about 103 species now known. The number as catalogued by Walker is much reduced, owing to many

names sinking as synonyms. Many additional, but undescribed, species probably exist in various museums and private collections. I have taken no cognizance of museum or catalogue names without descriptions. The materials from which I have worked are:— (1) the very extensive collection of the British Museum; (2) the valuable collection in the Oxford Museum, especially interesting as containing a considerable portion of Mr. Bates's private Amazonian collections, for an opportunity of consulting which I am indebted to the courtesy of Professor Westwood; (3) the collection of Baron de Selys Longchamps, of Liège, which contains most of Rambur's types; and (4) my own collection.

GEOGRAPHICAL DISTRIBUTION.

The range of the family may be said to extend from between the parallels of 40°–50° N., and 30°–40° S.; but, as a rule, it is more abundantly represented within the tropics. The various generic groups exhibit a decided tendency to localization. In no case is the same group represented both in the Old and New Worlds. I give below an outline of distribution according to groups:—

Mediterranean District.—*Ascalaphus* (extending into Central Europe and Central Asia); *Bubo*, *Puer*, *Theleproctophylla*.

Asia.—*Ildricerus* (India); *Helicomitus* (India); *Siphlocerus* (India); *Ogeogaster* (India); *Ascalaphodes* (India); *Glyptobasis* (India); *Acheron* (India, China); *Hybris* (India, China, Japan, Malayan archipelago); *Suphalasca*? (Malay archipelago).

Africa.—*Melambrotus* (South-west); *Tmesibasis* (South-east); *Cormodes* (West); *Helicopteryx* (South); *Proctarrelabris* (South); *Nephoneura* (South); *Encyoposis*, *Suphalasca*,?

Australia.—*Suphalasca*, *Aemonotus*.

America.—*Ulula*, *Orphne*, *Colobopterus*, *Cordulecerus*, *Haploglenius*, *Ptynx*.

HABITS, &c.

There is probably scarcely any group of insects of equal importance of which less has been recorded in a biological point of view. The numerous class of explorers, more or less disinterested in their intentions, find full occupation in geographical and ethnological subjects, with an occasional notice of some remarkable point in the higher branches of zoology. On the other hand, those travellers who avowedly make the collecting of natural-

history objects their especial business for a pecuniary object, are necessarily devoted principally to those groups that find the most admirers, and are too often compelled, not always willing, panderers to a collecting-mania, in which the biology of the species of the most desiderated orders is scarcely attended to, and that of even the most conspicuous forms in other groups wholly neglected. Hence the records of the earlier stages and habits of the *Ascalaphidæ* are extremely meagre. With regard to the conspicuous species of the European restricted genus *Ascalaphus*, the same remarks will obtain with almost equal force. As is usually the case, those entomologists resident in localities where the insects abound feel the objects too familiar to be worthy of investigation; so that, with one honourable exception, we are almost without records of the habits of species which, from their gaudy appearance, were originally considered Butterflies. Had not this pleasing illusion been dispelled, we should have found hosts of observers, minute in details, and critical to absurdity in their appreciation of the discoveries of their fellow entomologists.

The barely definable line of demarcation between the *Ascalaphidæ* and the more familiar *Myrmeleonidæ*, or Ant-lions, points to similarity of habit, which has been sufficiently proved. The larvæ of the former, however, *never* make pitfalls, which is a frequent custom with those of the latter.

Putting on one side several unimportant and vague remarks on larvæ supposed to belong to the *Ascalaphidæ*, the first detailed account of the habits of a species of this family is given in the 'Trans. Linn. Soc.' vols. xiv. & xv., by that careful observer the Rev. Lansdown Guilding. He described with much care the metamorphoses of a species found in the Island of St. Vincent, in the West Indies, which he named *Ascalaphus Macleayanus*, belonging to Rambur's genus *Ulula*. In vol. xiv. p. 140, he says, "Habitat solitarius, volatu diurno satis frequens in dumetis S^{ti} Vincentii; ramulis emortuis sæpe quiescit, hostesque colore fugit." In vol. xv. is an extract from the minute-book relating to the Meeting of June 6, 1826, in which we read at p. 510, "Animal insectivorum?, sæpe die quiescit in arbustis vetustis emortuis, cum antennis alisque ramo applicatis, abdomineque in angulum (more ramuli) extenso, sic hostes decipiens. Ova numero 64-75 lanceolato-elliptica cinerascens, apicibus puncto candido in extremitate ramulorum ponit imago; serie duplici alternatim agglutinans et circulis multis repagulorum ab hostibus defendens.

Repagula elongata pedunculata, subdiaphana, rufescentia. Larva —Abdomen ovale, complanatum, scabrum;.....pectines utrinque decem atro ciliati, anticis duobus (alarum rudimentis?) curvis." And at p. 511 we are informed that "by the term *repagula* (barriers) Mr. Guilding designates certain attendants on the eggs, which he conceives to be without analogies in the animal creation. They are curiously placed in circles, and always on the extremity of a branch, so that nothing can approach the brood; nor can the young ramble abroad till they have acquired strength to resist the ants and other insect enemies. The female may be seen expelling from her ovary these natural barriers with as much care as her real eggs." Typical examples of the perfect insect are contained in the Oxford Museum, with young larvæ; and I imagine it is one of the latter that Prof. Westwood figures in his 'Introduction,' fig. 63, 20. It is much to be regretted that no one since Guilding's time has described the metamorphoses of American species of the family. The allies of his species are common enough in some parts of America, and a species so closely related as to have been considered identical is found in the Southern States; why, then, does not some American entomologist give us some information respecting the extraordinary barriers by which the eggs &c. are protected? That these are not present in Old-World species is certain, so far as observations have gone. If the barriers also "protect" the larvæ till they have acquired sufficient strength to protect themselves, one is tempted to ask on what these feed in the mean time?

In the 'Verhandlungen der zoologisch-botanischen Gesellschaft in Wien,' for 1854, pp. 463-471, and 1855, pp. 479-482, Herr Brauer, so well known for his biological researches on various *Neuroptera*, records his observations on *Ascalaphus macaronius*, with explanatory figures. According to him, "The perfect insects fly only in the sunshine, very high in the air during calm weather; their flight resembles that of *Zygæna* among the Lepidoptera, but is steadier. In the morning, and in cold rainy weather, they sit on stalks of grass with the wings folded roof-wise. They are then difficult to see, because they notice each movement of the observer, and turn slowly round the grass-stem, so that they always maintain the same concealment. The time of flight begins at the end of June, and lasts until the middle of August. Pairing takes place during flight. The male seizes

the female with the appendices of the last segment; and both fall to the ground, and rest on some plant. Their position is then similar to that of the *Noctuidæ* and other *Lepidoptera*. A few days after pairing the female lays her eggs. These are arranged in two parallel rows, to the number of forty or fifty, on some plant, generally grass. When at large I have observed them to hunt chiefly *Lepidoptera* and small beetles." The young larvæ scatter themselves little from the position in which they are bred, and grow very slowly until the end of winter (though born in August); they are then very difficult to find, and appear to feed chiefly on *Aphides*, hiding mostly amongst moss and small stones. In the spring they begin to grow more rapidly, and take to larger food; and in June they spin cocoons amongst low herbage, in which they change to pupæ. The larvæ have a process on the sides of each thoracic and abdominal segment, though far less developed than in *Ulula*; and the possession of these processes seems to be one of the best characters whereby to separate the larvæ of the *Ascalaphidæ* from those of *Mymeleonidæ*, which latter have no processes. In the same Journal for 1867, p. 966, Brauer briefly alludes to a larva of this family from Rockhampton, which, I think, is probably that of a *Suphalasca*. He describes it as having only one long tooth to the mandibles.

I possess the eggs of a species of the family from Saugor, Central India, given to me by Mr. F. Moore, of the India Museum. They are arranged in two or three rows on a dead twig of mulberry, to the number of nearly sixty. These eggs produced larvæ thirteen days after they were discovered. The larva is about 3" in length, the head rather broader than long, with two produced eye-bearing tubercles in front, and very deeply concave on its hinder margin, extremely rough; the mandibles with three large teeth and many smaller ones. Each thoracic and abdominal segment has a subcylindrical process on each side furnished with long and strong spines. Neither with these eggs nor with those of *Ascalaphus macaronius* is there any vestige of the *repagula* mentioned by Guilding.

A larva given to me by Mr. Bates, captured by him in the Amazon region, evidently belongs to the family, and may possibly be that of a *Ulula*. It is $6\frac{1}{2}$ " long, without the mandibles (or $8\frac{3}{4}$ " including those members), and nearly 5" broad at its broadest part. The mandibles have three equidistant long teeth, between which are very short tubercular teeth. The head is nearly quadrate and sca-

brous, deeply concave behind, the sides denticulate and fringed; the eyes are twelve in number, six on each side, placed on the produced anterior angles of the head. The thoracic and abdominal segments are each furnished with a long, slightly curved, flattened lamina, densely fringed with spines, the first thoracic lamina longer and broader than the others; the abdomen very broad and thin, somewhat transparent in the dry larva, convex above and concave beneath; the legs entirely hidden under it.

In an example of *Proctarrelabris annulicornis*, from Natal, in the British Museum, a note is attached in the handwriting of its captor, Mr. Guenzius, stating that the species hides by day in chinks of the bark of old trees, and at dusk flies about the trees hawking insects. An example of *Idricerus decrepitus*, from North India, in my collection, is ticketed (by Capt. A. M. Lang, R.E., who gave it to me) as having been taken in the twilight.

Mr. Bates, who had ample opportunities of observing these insects when on the Amazons, informs me that the species were most numerous in the dry sandy country of the Tapajos, and much rarer in the humid virgin forests of Pará and the Upper Amazons. Of the *Haploglenii* he says the flight is short but rapid in the shades of the forest in the daytime, the insects reposing with the wings expanded, as in *Libellula* (a most valuable observation), and resting head upwards. Of the *Ululæ* and *Colobopteri* he remarks that they are mostly found in dry woods and dry grassy savannas, resting during the day on twigs of dead trees or bushes, with the wings tectate, as in all genera excepting *Haploglenius*, and head downwards.

In the foregoing notes, I think, is incorporated every biological observation of any importance that has yet been made. Their paucity should stimulate observers to further investigations.

GENERIC CHARACTERS.

Antennæ.—The principal points to be noticed are the comparative lengths, form of the club, presence or absence of serration or denticulation in any portion of them (a character that can only be applied to the ♂; in the ♀ there is never either denticulation or serration), presence or absence of verticillate hairs on the basal portion, and, lastly, whether in the ♂ they are straight or nearly so, or present bendings or twistings of some portion.

Eyes.—Whether simple or divided by a groove into two por-

tions, and the comparative size of these portions. The eyes in the Schizophthalmous division are really double, the upper portion overlapping the under; if the upper portion be separated, the lower division looks like a small spherical ordinary eye.

Thorax.—Comparative robustness and amount of villosity.

Abdomen.—Length and disparity of form in the sexes; presence or absence of dorsal humps (for the ♂ only); and especially the presence or absence of anal appendices in the ♂, and, when present, their form.

Legs.—Comparative length and strength, and the length of the tibial spurs, as compared with the basal joints of the tarsi. (In this last character, as given under each genus, it is always the posterior legs that are referred to.)

Wings.—Size and shape, closeness or openness of the network. The base of the inner margin should always be particularly examined. In the anterior wings this portion varies very much: ordinarily there is a simple small excision at the extreme base, with the axillary angle more or less prominent; occasionally, however, the basal part of the inner margin has a long excision, rendering the wings almost petiolate; and frequently proceeding from this portion is a long tooth-like projection, in which case the wings are said to be "appendiculate:" this tooth is, in reality, the axillary angle standing out prominently in consequence of the margin beyond it being scooped out; when present it is always irrespective of sex (*cf.* Hagen in Stett. ent. Zeit. 1866, p. 373). In the posterior wings regard must be had to the outline of the basal portion of the posterior margin: in these wings also a point of structure in the neuration must be especially attended to; I allude to the lower cubitus ("la cinquième nervure" of Rambur); in most genera this nervure, near the base, presents a slight geniculation, from which proceeds an oblique nerve running into the underlying longitudinal nervure (the postcosta); occasionally the indication of this oblique nerve is very slight, and it then is scarcely distinguishable from the ordinary veinlets, only that its point of departure can be detected by the indentation of the cubitus above alluded to; occasionally also the deep excision of the inner margin, and consequent narrowing of the base of the wing, nearly obliterates both the oblique nerve and the postcosta; in a few (American) genera there is no indication whatever of this oblique nerve, and the postcosta is long and sinuous.

With regard to the sequence and affinities of the genera, I believe it to be impossible to rely upon any special characters in the imago alone, and consider that no thoroughly stable arrangement can be arrived at until a knowledge of the earlier stages and general habits can be acquired. One should rely more upon facies in the present crude state of the family as a guide to affinities. An arrangement based upon special characters would tend to widely separate forms which are evidently closely allied one to the other, and would place in juxtaposition those with little relationship. It seems probable that even the obvious character of the entire or divided eyes will eventually be found insufficient to maintain the existence of two divisions, however useful the character may appear at the present time.

I have given no characters derived from an examination of the parts of the mouth, such examination being almost impossible in dry examples.

This appears to be the best place for a discussion of the affinities of the anomalous genus *Stilbopteryx*, Newman (*Azcsia*, Lefebvre). Lefebvre placed it unhesitatingly in the *Ascalaphidæ*, and succeeding writers have pretty generally followed him. It should be remarked, however, that the most obvious character, the very short antennæ, was not observed by him, in consequence of these organs being wanting in his type; in his figure he supplied ideal long antennæ, as is usual in the family. Hagen, in 1866 (Stett. Ent. Zeit. p. 372), transferred the genus to the *Myrmeleonidæ*, stating that he did so in consequence (especially) of the character of the reticulation of the poststigmatal area, which is made up of numerous small *oblong* cellules, whereas in the *Ascalaphidæ* these cellules are ordinarily many-angled. I fail to appreciate this character to the extent that my friend Dr. Hagen does, because in some *Ascalaphidæ* (e. g. *Orphne*) there is a decided tendency to this oblong building of the cellules, and, on the other hand, I do not find in any *Myrmeleonidæ* a full equivalent of the cell-structure exhibited in *Stilbopteryx*. The form of the palpi seems certainly more analogous to that of the *Ascalaphidæ* than to most of the *Myrmeleonidæ*; and the facies of the genus reminds one much of some species of *Suphalasca* that inhabit the same districts.

It is, then, with much hesitation that I have omitted *Stilbopteryx* from the *Ascalaphidæ*; that I have done so is solely owing to the formation of the antennæ, which finds no parallel in that

family, believing, nevertheless, that the discovery of the earlier stages will reinstate it in its original position*.

SPECIFIC CHARACTERS.

The ordinary minor differences in form, and the colours of the various members, should be taken into consideration. As this is not intended as a monograph of species, I shall say little on this subject, save to enjoin caution. I have already remarked that the species appear to vary much according to locality in some cases. How far this variation may entitle the forms to specific right, or only to the minor position of "varieties," cannot be considered with the materials at present in hand. Another very important matter is the coloration of the wings. In many species in which the wings are *tinted*, it is certain that the full amount of coloration is not acquired until after a considerable time, as in many *Libellulidæ*. These insects are probably comparatively long-lived, and the tinting would seem to be the result of a kind of oxidation of the membrane of the wing, that proceeds gradually. Very great caution should be exercised in considering the comparative robustness or obesity of the ♀ abdomen. It is probable that many females live, for the enjoyment of life, for some little time after the ova are deposited; and in these "spent"

* [Since these remarks were written, I have discovered a character which tends to prove that *Stilbopteryx* has really more relationship to the *Myrmelionidæ* than to the *Ascalaphidæ*. At the extreme base of the inner margin of the posterior wings of the male is a corneous semipedunculate knob. This is present in the males of *Palpares*, *Acanthacalis*, &c., but, I think, is always absent in *Ascalaphidæ*.]

I am not prepared to say how many species of *Stilbopteryx* may exist. All that I have seen seem to pertain to the same species, differing in the spotting of the sides of the abdomen according to sex. All these I refer to *costalis*, in the ♂ of which the abdomen is somewhat geniculate at the fourth segment, and on the dorsum of this segment there is a protuberance covered with short black spines. Dr. Hagen, however (in litt.), believes he has four species. One of these, from Western Australia, is very extraordinary, and has (I presume in the ♂ only) an enormous protuberance on the base of the dorsum of the abdomen, having some analogy to the formation seen in *Acmonotus incusifer*, which latter certainly is of the *Ascalaphidæ*. The "nov. sp. Coll. M'Lachlan," mentioned by Hagen in *Stett. Zeit.* 1866, p. 460, and stated on the authority of a verbal communication from me to him, some years since, as coming from Java, is probably only *costalis*. I captured it myself, in 1855, on board ship. I can find no note in my journal concerning it, and now think that it must have flown on board off the coast of New South Wales, and not when near the island of Java, as I formerly supposed.

females the abdomen often shrinks to a less size than that of the male, although before oviposition commenced it was of enormous bulk.

I would here explain that in the diagnoses that follow, by the term "*Frons*" I mean the vertical face of the head; "*Vertex*" includes the whole upper surface of the head from the base of the antennæ to the posterior margin; "*Occiput*" refers to the back portion of the head *behind* the eyes. The measurements are in *English lines* (12" = 25 millimetres).

Tabula Generum.

Div. I. HOLOPHTHALMI.

(Oculi integri.)

- A. Alæ anticæ ad basin appendiculatæ.
- a. Antennæ alis multo breviores.
- b. Alæ anticæ posticæque ad basin perangustatæ, inde sat latæ, dense reticulatæ ✓ *Ptynx*, Lefebv.
- bb. Alæ anticæ ad basin paullo angustatæ, aperte reticulatæ, (*vide infra*) ✓ *Haploglenius*, Burm.
- bbb. Alæ perangustatæ ✓ *Melambrotus*, n. g.
- aa. Antennæ alis æquales vel longiores. Alæ variegatæ, ad basin angustatæ, inde dilatatæ. . . ✓ *Tmesibasis*, n. g.
- B. Alæ anticæ haud appendiculatæ.
- c. Alæ, insecto haud volitante, fere horizontaliter extensæ. Prothorax maris supra in valvulam magnam postice productus. Abdomen subgracile. ✓ *Haploglenius*, Burm.
- cc. Alæ, insecto haud volitante, longitudinaliter deflexæ. Prothorax maris simplex.
- d. Alæ latæ. Corpus valde robustum, breve. ✓ *Cormodes*, n. g.
- dd. Alæ angustiores. Corpus gracilius, longius. ✓ *Idricerus*, n. g.

Div. II. SCHIZOPHTHALMI.

(Oculi divisi.)

- A. Ramulus obliquus cubiti inferioris in alis posticis deest; postcosta elongata, sinuata. (Genera Americana.)
- a. Alæ anticæ ad basin appendiculatæ; posticæ maris prope basin valde dilatatæ. Antennæ alis æquales vel longiores. ✓ *Orphne*, Lefebv.

- aa.* Alæ anticæ haud appendiculatæ.
- b.* Alæ latæ : posticæ ad basin dilatatæ ; margine anali plus minusve exciso vel sinuato. Calcaria tibiæ posticarum articulis tarsorum 1° et 2° simul sumptis vix longiora.
√ Cordulecerus, Ramb.
- bb.* Alæ plerumque angustiores : margine anali posticarum integro, convexo. Antennæ alis plerumque breviores, clava brevi. Calcaria tibiæ posticarum articulis tarsorum 1°, 2°, 3°que simul sumptis vix longiora.
√ Ulula, Ramb.
- bbb.* Alæ elongatæ, angustatæ, posticæ haud dilatatæ ; margine anali ante basin plerumque profunde exciso, ad basin dilatato. Antennæ alis æquales vel longiores, ad basin pilis verticillatis plus minusve instructæ ; clava angustata, elongata. Calcaria tibiæ posticarum articulis tarsorum 1°, 2°, 3°, 4°que simul sumptis vix longiora.
√ Colobopterus, Ramb.
- B.** Ramulus obliquus cubiti inferioris in alis posticis cum postcosta conjunctus (interdum fere obliterated), hæc brevior.
- α.* Alæ anticæ ad basin appendiculatæ.
- β.* Antennæ ad basin pilis verticillatis instructæ.
√ Nephoneura, n. g.
- ββ.* Antennæ pilis verticillatis haud instructæ ; parte basali maris paullo arcuato, intus denticulato.
√ Glyptobasis, n. g.
- αα.* Alæ anticæ haud appendiculatæ.
- γ.* Antennæ ad basin pilis verticillatis instructæ.
- δ.* Abdomen maris subgeniculatum, ad apicem lateraliter membranaceo-alatum ; appendicibus brevibus, divaricatis *√ Helcopteryx*, n. g.
- δδ.* Abdomen maris simplex ; appendicibus elongatis, forcipatis *√ Proctarrelabris*, Lefebv.
- γγ.* Antennæ pilis verticillatis haud instructæ.
- * Abdomen maris appendicibus instructum.
- † Abdomen maris tumore permagno conicali supra ad basin instructum ; appendicibus brevibus cylindricis, vix forcipatis. Alæ perangustatæ.
√ Acmonotus, n. g.
- †† Abdomen in utroque sexu simplex.
- ‡ Appendices elongatæ, forcipatæ, processu intus in medio instructæ.

- § Abdomen fœminæ appendicibus foliaceis instructum √ *Theleproctophylla*, Lefebv.
- §§ Abdomen fœminæ appendicibus haud instructum √ *Bubo*, Ramb.
- ‡‡ Appendices simplices.
1. Antennæ maris ad basin arcuatæ.
√ *Hybris*, Lefebv.
 2. Antennæ maris in parte apicali flexuosæ et intus subserratæ. Alæ elongatæ, haud dilatatæ.
√ *Siphlocerus*, n. g.
 3. Antennæ maris regulariter paullo curvatæ, intus denticulatæ. Alæ breves, subtriangulares, maris partim opacæ √ *Ascalaphodes*, n. g.
 4. Antennæ maris fere rectæ simplices.
 - a. Abdomen maris fere glabrum, valde inflatum; appendicibus robustis. Alæ vix dilatatæ.
√ *Encyoposis*, n. g.
 - aa. Abdomen maris fere glabrum, subcylindricum; fœminæ valde dilatatum. Alæ paullo dilatatæ, maculatæ . . . √ *Ogcogaster*, Westw.
 - aaa. Abdomen breve, hirsutum. Alæ breves, subtriangulares, pictæ, sæpius partim opacæ; margine costali ad basin dilatato. Appendices breves, graciles . . . √ *Ascalaphus*, F.
- ** Abdomen maris appendicibus haud instructum.
- × Antennæ maris in dimidio basali flexuosæ et pilis fasciculatis extus instructæ. Alæ elongatæ. Abdomen fere glabrum √ *Helicomitus*, n. g.
 - × × Antennæ maris ad basin intus denticulatæ. Alæ elongatæ, dilatatæ. Abdomen maris perelongatum.
√ *Acheron*, Lefebv.
 - × × × Antennæ maris simplices.
 - ⊙ Alæ elongatæ, subæquales, vix dilatatæ. Abdomen modice elongatum. √ *Suphalasca*, Lefebv.
 - ⊙ ⊙ Alæ valde inæquales, subtriangulares. Abdomen breve, lateraliter valde hirsutum.
√ *Puer*, Lefebv.

It is impossible to draw up a table that shall apply intelligibly to both sexes; and as the generic characters depend so greatly upon sexual differences in formation of antennæ, abdomen, &c.,

it is very desirable that the outline characters that follow in the consideration of each genus should be consulted. Tables are matters of great convenience; but if they be in all cases implicitly relied upon for determining genera or species, confusion must ensue.

The exigences of a tabular arrangement have widely separated genera that are closely allied one to the other. The affinities of the various genera may be indicated in the following manner:—

Division HOLOPHTHALMI.—*Haploglenius*. *Ptynx*.——*Melambrotus*.——*Tmesibasis*.——*Cormodes*. *Idricerus*.

Division SCHIZOPHTHALMI.—*Cordulecerus*. *Ulula*.——*Orphne*. *Colobopterus*.——*Acmonotus*. *Suphalasca*.——*Bubo*. *Theleproctophylla*. *Siphlocerus*. *Helicomitus*.——*Encyoposis*. *Ogcogaster*.——*Glyptobasis*. *Acheron*. *Hybris*.——*Nephoneura*. *Proctarrelabris*. *Helcopteryx*.——*Puer*. *Ascalaphodes*.——*Ascalaphus*.

Division I. HOLOPHTHALMI.

√ GENUS HAPLOGLENIUS, *Burmeister*.

(*Amœa*, Lefebv.; *Byas*, Ramb.)

Wings extended nearly horizontally in repose, almost as in *Libellula*, but a little elevated; long, and generally rather broad, the basal portion never much narrowed; the anterior pair varying in the formation of the basal portion of the inner margin, which has either a long but slight excision with a rather prominent axillary angle, the same with the angle produced into a broad triangular tooth, or regularly convex with the angle obsolete; network open; pterostigma very large.

Antennæ equalling half the length of the wings, or longer or shorter than the half; club varying, but more or less elongate.

Thorax slightly villose; in the ♂ the prothorax is produced above posteriorly into a valve, which fits over a concave space in the front portion of the mesonotum.

Abdomen moderately long, slender; in the ♂ there is sometimes a pair of minute lateral appendices before the apex.

Legs, with the spurs of the posterior tibiæ scarcely so long as the first two tarsal joints.

Hab. Central and South America.

Much confusion has existed with regard to this genus, which

is a *very* natural one, notwithstanding its variability of character in the wing-formation. The position of the wings in repose is unique in the family, as is also the singular formation of the prothorax in the ♂. Much of this confusion is owing to Rambur and others having wrongly understood Burmeister's species, and confounded one of them with the *Ascalaphus appendiculatus* of Fabricius. The genus *Byas* of Rambur is certainly identical with *Haploglenius*, as is also *Amœa* of Lefebvre.

Species.

The species are without doubt numerous, but their differentiation is very difficult, owing to insufficient materials. The best characters exist in the comparative lengths of the antennæ, and in the formation of the wings, especially with regard to the shape of the basal portion of the inner margin of the posterior pair. The smaller species (*arenosus* and allies) are comparatively much more robust than the larger; and in them the prothoracic valve of the ♂ is less developed, and the hind wings, from the point of termination of the cubiti in the inner margin, become suddenly greatly dilated; and in these the club of the antennæ is less elongate. The males appear to be less numerous than the females, judging from the collective series of examples that have examined.

1. H. COSTATUS, *Burmeister*. (*Ascal. costatus*, *Burm. Handb.* ii. p. 1000.—*A. luteus*, *Walk. Cat. Brit. Mus. Neurop.* p. 450.—*A. circumflexus*, *Walk. op. cit.* p. 451.—*A. contrarius*, *Walk. op. cit.* p. 452.) Antennæ alarum dimidio multo longiores, rufæ, vel rufofusæ; clava infuscata. Frons vertexque fusco-villosi. Thorax griseo-fuscus, infra utrinque flavo bistrigatus; ♂ prothoracis valvula paullo elevata, saturate fusca, margine libero fere semicirculari anguste albo. Pedes flavidi; tarsi nigricantibus; femoribus tibiisque anticis intermediisque supra fusciscentibus. Abdomen griseo-fuscum; in ♂ appendicibus parvis ante apicem instructum. Alæ sat latæ, ad apicem acutæ, vix falcatæ, vitreæ, vel interdum testaceo paullo tinctæ; ad apicem (in ♀) plerumque late testaceæ; area subcostali et interdum (præcipue in ♀) area costali infuscatis; pterostigmate albido vel flavo-albido, pallide venato; venis venulisque nigris; margine interiore anticarum ante basin leviter exciso; angulo axillari paullo producto. Long. corp. 15–20''; exp. alar. 42–50''; postic. 36–43''.

Apparently very common in the Amazon region, and widely spread in Brazil. I have it from localities as widely separated as

Pebas on the Upper Amazons and Parana in South Brazil, without differences that seem to be specific. According to information kindly furnished by Dr. Hagen, who possesses the type, this is certainly Burmeister's species.

- +2. *H. FLAVICORNIS* (*De Selys, in litt.*), n. sp. Antennæ alarum dimidio vix longiores, omnino flavæ. Thorax abdomenque fusca, ille infra albidus. Pedes pallide flavi; tarsis fusciscentibus. Alæ latæ, fere vitreæ, ad apicem obtusæ; area costali subcostalique infuscatis; pterostigmate pallide infuscato, nigro-venato; anticarum margine interiore ante basin leviter exciso, angulo axillari in dentem triangularem producto (alæ hoc modo appendiculatæ) (♀). Long. corp. 12''; exp. alar. antic. 41'', postic. 39''.

Hab. Cuernavaca, Mexico. In the collection of Baron de Selys Longchamps.

This fine species differs from all others in the appendiculato anterior wings, though otherwise it is allied to *costatus* and other neighbouring forms.

- ✓3. *H. MICROCERUS*, *Rambur*. (*Byas microcerus*, *Ramb. Névropl.* p. 362.)

Hab. Antilles.

Unknown to me. I have seen no species that appears absolutely to accord with Rambur's description.

4. *H. TERMINALIS*, nov. sp. Antennæ alarum dimidio æquales, vel vix breviores, testaceæ; clava obscuriore. Frons vertexque fusco-villosi. Thorax griseo-fuscus, indistincte flavido varius, infra sparse cano-pilosus; ♂ prothoracis valvula paullo producta, auriformi, margine libero fere semiovato. Pedes sordide flavidi; tarsis nigris. Abdomen fuscum. Alæ angustatæ, ad apicem subacutæ, vitreæ; margine costali anticarum (area costali subcostalique), apicibusque omnium late venuste brunneis; venis venulisque brunneis; pterostigmate magno, albido, pallide venato; margine interiore anticarum ante basin regulariter convexo, angulo axillari fere obsoleto. Long. corp. 19''; exp. alar. antic. 38'', postic. 35''.

Hab. Tapajos (*Bates*). In the British and Oxford Museums.

A pretty species, remarkable for its narrow wings, the apices of which are broadly brown in both sexes.

5. *H. LEUCOSTIGMA*, *Walker*. (*Ascal. leucostigma*, *Walk. Trans. Ent. Soc. Lond.* ser. 2, vol. v. p. 195.) Antennæ alarum dimidio breviores, rufo-fuscæ; clava obscuriore. Frons vertexque fusco-pilosus. Thorax griseo-fuscus, vix flavo-variis. Pedes griseo-flavi; femoribus tibiisque supra fusciscentibus; tarsis nigris, articulo ultimo ad apicem rufo-testaceo. Abdomen griseo-fuscum. Alæ latæ, ad apicem subobtusæ, vitreæ; margine antico anticarum (area costali

subcostalique) pallide fusco; venis ramulisque fusco-nigris; pterostigmate magno, albo, pallide venato; margine interiore anticarum ante basin regulariter convexo, angulo axillari fere obsoleto (♀). Long. corp. 18''; exp. alar. antic. 43'', postic. 38''.

Hab. Amazons (*Bates*). In the British and Oxford Museums.

- ✓ 6. *H. ALBISTIGMA*, *Walker*. (*Ascal. albistigma*, *Walk. Cat. Brit. Mus. Neurop.* p. 452.) Antennæ alarum dimidio paullo breviores, testaceæ; clava fuscata, intus ad apicem flavida. Frons cervino-villosus. Thorax rufo-griseus, infra utrinque flavo-vittatus, flavo-variis. Pedes flavi; femoribus anticis intermediisque vix fusciscentibus; tarsis nigris. Alæ latæ, fere vitreæ; apicibus obtusis, late testaceis; pterostigmate albo, pallide venato: anticarum area costali subcostalique infuscatis, margine interiore ante basin regulariter convexo, angulo axillari fere obsoleto: posticæ anticis angustiores, margine antico (apicem versus excepto) haud tincto (♀). Exp. alar. antic. 40'', postic. 39''.

Hab. Honduras.

7. *H. SUBCOSTATUS*, *Burmeister*. (*Ascal. subcostatus*, *Burm. Handb.* ii. p. 1000.)

Hab. Brazil.

I cannot apply Burmeister's description, or a more explicit account of the characters of the insect received from Dr. Hagen, to any species I have seen, with absolute certainty. Nevertheless I think the species probably identical with the next-noticed, *H. injurius*. Burmeister states he had seen several *males*. However, I believe he did not know the male of either *costatus* or *subcostatus*. His types possess no prothoracic valve; neither does any specimen of *Haploglenius* in Hagen's collection, as he informs me; hence I doubt not that all are females.

8. *H. INJURIUS*, *Walker*. (*Ascal. injurius*, *Walk. Cat. Brit. Mus. Neurop.* p. 447.) Antennæ alarum dimidio æquales, fuscæ, ad basin flavæ; clava nigra, extus supra infraque ochracea. Frons cervino fuscoque villosus. Thorax obscure testaceus, griseo-variis. Pedes griseo-flavidi; tibiis subtus fusco-lineatis; tarsis piceo-nigris. (Abdomen mutilatum.) Alæ elongatæ, sat latæ, obtusæ, vitreæ; venis venulisque nigris; pterostigmate pallide flavo, nigro-venato: margine interiore anticarum ante basin fere regulariter convexiusculo, angulo axillari obtusum (♀). Exp. alar. antic. 40'', postic. 37''.

Hab. Brazil.

9. *H. DAMNOSUS*, *Walker*. (*Ascal. damnosus*, *Walk. Cat. Brit. Mus. Neurop.* p. 449.) Antennæ alarum dimidio longiores. Thorax fusco-flavoque variis. Pedes flavi; tibiis extus fusco-lineatis; tarsis nigris.

Abdomen fuscum, infra pruinatum. Alæ breves, latæ, posticæ basin versus valde dilatatæ; margine antico (area costali subcostalique) pallide flavido tincto; pterostigmate pallide flavido, nigro-venato (♀). Long. corp. 15''; exp. alar. antic. 35'', postic. 32''.

Hab. Brazil?

This species connects the group of *costatus* with that of *arenosus*.

10. *H. INIQUUS*, Walker. (Ascal. iniquus, Walk. Cat. Brit. Mus. Neurop. p. 448.) Antennæ alarum dimidio paullo longiores. Frons nigro-villosus. Thorax supra fulvo-fuscoque variis, infra albo-pruinosis. Pedes albi; tibiis extus fusco-variis. Abdomen fulvum, supra nigro geminato-punctatum. Alæ vitreæ, pernitidæ, venuste iridescentes; venis venulisque nigris; pterostigmate brunneo, nigro-venato: anticæ clongatæ, paullo angustatæ; posticæ basin versus valde dilatatæ, apicem versus angustatæ (♀). Long. corp. 17''; exp. alar. antic. 34'', postic. 29''.

Hab. Villa Nova, Amazons (Bates).

11. *H. ARENOSUS*, Walker. (Ascal. arenosus, Walk. Cat. Brit. Mus. Neurop. p. 450.) Antennæ nigro-piceæ, alarum dimidio paullo longiores; clava nigra, infra ochraceo-suffusa. Frons fulvo-piceoque villosus. Thorax fuscus, supra utrinque testaceus, infra utrinque late flavidus. Pedes testacei; tarsis nigris. Abdomen brunneum, basin versus cinereo-villosum (thorax abdomenque interdum fere omnino albo-pruinosis). Alæ vitreæ, obtusæ, sat latæ; venis venulisque nigris; pterostigmate flavo, nigro-venato. Long. corp. 14''; exp. alar. antic. 27-32'', postic. 24-29''.

Hab. Amazons (Bates).

I think it very possible that *arenosus*, *iniquus*, and *impediens* are forms of one species; but this can only be decided by the investigations of future observers. Mr. Bates paid but little attention to the *Neuroptera*. In other orders he proved incontestably that, in the regions he explored, different localities presented local forms that to all intents and purposes are entitled to be considered distinct: this may also obtain in the *Ascalaphidæ*. *H. iniquus* and *impediens* certainly appear to have the wings much more glossy than *arenosus*; and *iniquus* especially has narrower anterior and more dilated posterior wings.

The prothoracic lobe of the male in *arenosus* is much less evident than in that of the group of *costatus*: it is smaller, and so closely applied over the front portion of the mesonotum as to be scarcely distinguishable from the anterior lobe of that segment.

12. *H. IMPEDIENS*, Walker. (Ascal. impediens, *Walk. Cat. Brit. Mus. Neurop.* p. 449.) Antennæ alarum dimidio paullo longiores, nigræ; clava infra in medio flava. Frons cervino-fuscoque villosus. Thorax griseus, supra vittis duabus longitudinalibus flavis, infraque vitta utrinque lata flavo-albida, ornatus. Pedes pallide flavidi; femoribus, tibiisque extus fuscis; tarsis nigris. Abdomen fuscum, supra utrinque flavido-vittatum. Alæ breves, latæ (posticæ basin versus valde dilatatæ), vitreæ, pernitidæ, venuste iridescentes; venis venulisque nigris; pterostigmate pallide flavo, nigro-venato. Long. corp. 13''; exp. alar. antic. 33'', postic. 29''.

Hab. Para (*Bates*).

13. *H. IMMACULATUS*, Olivier. (Ascal. immaculatus, *Oliv. Encyc. Méthod.* iii. p. 246.)

Hab. South America.

Olivier certainly had a species of *Haploglenius* before him when he wrote his description; but it is impossible to identify it. His remark that "Les ailes de cet insecte lui donnent un peu l'air d'une libellule," has more significance than he probably intended, when the position of the wings in repose is taken into consideration.

✓ Genus *PTYNX*, *Lefebvre*.

(*Haploglenius*, *Ramb. nec Burm.*)

Wings elongate, narrow, the two pairs nearly equal in length, the posterior pair somewhat narrower; the basal portion longly excised on the inner margin, and very narrow: anterior pair appendiculate; posterior pair with a slight dilatation at the extreme base of the inner margin: network very close; the neuration furnished with strong hairs; and there are also strong but short hairs on the membrane of the cellules, especially in the apical portion.

Antennæ short, scarcely more than half the length of the wings, robust; club short and broad.

Thorax hairy.

Abdomen slender in the ♂, acuminate, hairy, with a pair of very short, somewhat spoon-shaped, semicircular terminal appendices: more obese and shorter in the ♀.

Legs with the spurs of the posterior tibiæ nearly equalling the first three tarsal joints.

Hab. Southern United States.

Lefebvre refers *costatus* of Burmeister to this genus as the type; but I believe he misunderstood Burmeister's insect.

Species.

I am acquainted with two species, as under:—

- √ 1. *P. APPENDICULATUS*, *Fabricius*. (*Ascal. appendiculatus*, *Fab. Ent. Syst.* ii. p. 96; *Hag. Stett. ent. Zeit.* 1863, p. 376.—Haplogl. *appendiculatus*, *Ramb. Nérop.* p. 363.—*Ptynx costatus*, *Lefebv., Guérin's Mag.* 1842, nec *Burm.*) Antennæ rufo-picæ; clava infuscata. Thorax fuscus, supra rufo-varius, fusco-hirtus; infra utrinque flavidus. Pedes flavidi; tarsi infuscatis. Abdomen supra testaceo fuscoque varium, fusco-hirsutum; infra flavidum, vittis tribus nigris, interruptis, ornatum. Alæ subvitæ; area costali subcostalique (illa pallidiore) brunneis: pterostigmate brunneo, subobsoleto; venis venulisque brunneo-testaceis, nigro-hirsutis. Exp. alar. 41'''.

Hab. Georgia (and probably other Southern States).

- + 2. *P. JUVENILIS*, nov. sp. Antennæ nigro-picæ; clava nigra. Thorax niger, supra flavo-maculatus, fusco-villosus, infra utrinque flavus, cano-villosus. Pedes fusci; femoribus tibiisque flavo-lineatis; tarsi nigro-picis. Alæ subvitæ; area subcostali infuscata; pterostigmate nigro-notato; venis venulisque nigris. Exp. alar. 34'''.

Hab. Texas (*Belfrage*). In my collection.

Much smaller than *appendiculatus*, and evidently distinct.

† Genus *CORMODES*, n. g.

Wings elongate, rather broad, nearly equal, margins parallel, apex obtuse; anterior pair obliquely excised at the extreme base of the inner margin, not appendiculate: network open.

Antennæ shorter than the wings, curved downwards at the tip; club large, pyriform.

Thorax very robust, and strongly villose.

Abdomen, ♀, very short, robust, obtuse.

Legs with the spurs of the posterior tibiæ as long as the first two tarsal joints.

Hab. West Africa.

Species.

1. *C. INTRACTABILIS*, *Walker*. (*Ascal. intractabilis*, *Walk. Trans. Ent. Soc. Lond.* 2nd series, vol. v. p. 196.) Antennæ fuscæ; clava nigra, subtus ad apicem testacea. Frons fusco-villosus. Thorax pallide griseo-ochraceus, fusco-flavoque-varius, cano-lanuginosus; supra maculis duabus parvis nigris. Pedes grisei; nigro-spinosi; tarsi genibusque obscurioribus. Abdomen griseum, nigro-varium, infra ad basin flavidum, striga lata, transversa, nigra, ornatum. Alæ

vitreæ; striga interrupta in dimidio apicali, punctisque nonnullis discalibus basin versus, fuscis; pterostigmate albedo, intus fusconotato; venis venulisque plerumque flavis, nonnullis nigris (♀). Long. corp. 14''; exp. alar. antic. 47'', postic. 43''.

† Genus *IDRIOERUS*, n. g.

Wings elongate, rather narrow, slightly dilated in the middle, apex subacute; anterior pair with a semicircular excision at the extreme base of the inner margin, followed by a small obtusely angular dilatation, and afterwards shallowly excised, not appendiculate: network moderately open.

Antennæ shorter than the wings, straight; club very large, broadly and shortly pyriform; a dense tuft of hairs on the face and between the antennæ.

Thorax very villose.

Abdomen shorter than the wings, moderately stout.

Legs with the spurs of the posterior tibiæ scarcely equalling the first two tarsal joints.

Hab. North India.

Allied to *Cormodes*, but differing from it in the form of the wings, especially at the basal portion of the inner margin, and in the longer and less robust abdomen.

Species.

1. *I. DECREPITUS*, Walker. (Ascal. decrepitus, *Walk. Trans. Ent. Soc. Lond.* ser. 2, vol. v. p. 197.) Frons vertexque cinereo-villosa; pilis inter antennis nigris. Antennæ pallide flavæ, nigro-cinctæ; articulo basali clavaque nigris. Thorax niger, antice flavo-varius, supra in medio fusco-villosus, utrinque et infra cinereo-villosus. Pedes fuscii; tibiis late flavo-bicinctis, nigro-hirsutis; tarsis nigris, articulo basali ad basin testaceo; unguiculis calcaribusque rufis. Abdomen nigrum, paulo cinereo-pilosum; segmentis duobus basalibus supra testaceo-maculatis. Alæ vitreæ; venis venulisque nigris, nonnullis nigro-marginatis, flavo-interruptis; pterostigmate brunnescente, nigro-venato. Long. corp. 12-15''; exp. alar. antic. 32-40''.

I have examples from North India, taken in May and June by Capt. A. M. Lang, R.E.

Walker could not have observed the entire eyes, or he would never have indicated (*l. c.*) that the species belongs to the group of *Ogcogaster* (*tessellatus*, &c.), with which it has no affinity whatever.

2. I.(?) *obscurus*, *Westwood*. (Ascal. (Haplogl.) *obscurus*, *Westw. Cab. Or. Ent.*)

I can say nothing as to this species; the type is no longer in existence, or cannot be found: I am acquainted with no Asiatic species with simple eyes, excepting *I. decrepitus*.

† Genus *MELAMBROTUS*, n. g.

Wings long and very narrow, the inner margin longly excised at the base, afterwards the inner and costal margins are nearly parallel; anterior pair appendiculate: network rather close; transverse branch of the lower cubitus confluent with the postcosta in all the wings.

Antennæ short and stout, nearly straight, only about half the length of the wings, without hairs at the base; club roundly capitate.

Thorax slightly villose above, densely so on the breast.

Abdomen about the length of the wings, subcylindrical, without appendices in the ♂.

Legs very short and strongly spinous; spurs of the posterior tibiæ as long as the first two tarsal joints.

Hab. South-west Africa.

A remarkable genus, founded on the single species described below: the wings are narrower, and the antennæ shorter, than in any other genus of *Holophthalmi*, and the facies altogether peculiar. In the posterior wings the branch of the lower cubitus is almost obsolete, scarcely distinguishable from the ordinary transverse veinlets, owing to the space between the veins being so greatly narrowed.

Species.

† 1. *M. SIMIA*, nov. sp. Frons cinereo-pilosus. Vertex transverse fusco et flavo-varius, fusco-villosus. Antennæ flavæ; clava intus nigro tenuiter semicincta. Thorax fusco-griseus, testaceo-varius, supra sparse fusco-pilosus, infra dense cinereo-villosus; supra maculis tribus, quarum duæ punctiformes, altera transversa, semilunata, nigris, late cinereo-cinctis, vel marginatis. Pedes nigri, cinereo-pilosi, nigro-spinosis; tibiis ad basin obscure testaceis. Abdominis dimidium basale cinereum, nigro-punctatum, apicale nigrum. Alæ vitreæ, striga subcostali e basi usque ad apicem extensa, in aream poststigmaticalem dilatata, nigra, ornata; venis venulisque plerumque nigris, nonnullis albidis; pterostigmate flavido, intus nigro-notato (♂). Long. corp. 14''; exp. alar. antic. 32''.

Hab. Damara Land (*Andersson*). In my collection.

† Genus *TMESIBASIS*, n. g.

Wings elongate, the basal portion of the inner margin very strongly excised and petiolate, longly appendiculate in the anterior pair: after the narrow base rather broadly dilated and nearly oval, acute at the apex: network rather open; branch of the lower cubitus confluent with the postcosta in all the wings.

Antennæ much longer than the wings, furnished with verticillate hairs at the base: club extremely long and slender.

Thorax scarcely villose.

Abdomen slender, shorter than the wings (without appendices in the ♂?).

Legs with the spurs as long as the first three tarsal joints.

Hab. Mozambique.

Founded on a single species, *Ascal. laceratus*, Hagen, which I have not seen: the characters have been drawn up from Hagen's careful description and beautiful figure. A very sharply defined genus, without a parallel among the *Holophthalmi*; the formation of the antennæ approaches that of *Colobopterus* among the *Schizophthalmi*.

Species.

1. *T. LACERATA*, Hagen. (*Ascal. laceratus*, Hag., *Peters's Reise nach Mossamb.* p. 92, pl. v. fig. 3.)

Division II. *SCHIZOPHTHALMI.*‡ Genus *CORDULECERUS*, Rambur.

(*Suphalasca*, part., Lefebv., Hag.)

Wings ample, usually broad, but varying much. Anterior pair with an evident excision at the extreme base of the inner margin, not appendiculate, dilated in the middle, inner margin contracted at the point where the cubiti terminate; apex acute posterior pair with the anal portion of the inner margin ordinarily deeply sinuate in the ♂, slightly sinuate in the ♀, broad at the anal portion, contracted at the termination of the cubiti, no transverse branch of the lower cubitus; postcosta strongly sinuous: network open.

Antennæ as long as the wings, the extreme base with a few verticillate hairs; club elongately spoon-shaped; a very dense tuft of hairs between the antennæ.

Eyes with the divisions equal.

Thorax very densely and longly villose.

Abdomen short; rather slender in the ♂ and without appendices; shorter and very obese in the ♀.

Legs with the spurs of the posterior tibiæ somewhat exceeding the first two tarsal joints.

Hab. Tropical and South America.

At first sight a very strongly marked genus, characterized by its ample and subtriangular wings, the anal portion of the posterior pair being profoundly sinuate in the ♂; but at least one species (I believe, the typical *Asc. surinamensis* of Fabricius) shows an affinity with *Utula*: the tibial spurs are certainly shorter than in that genus, but not to the extent indicated by Rambur, who says "aussi longs que les deux premiers articles;" to my eyes they appear fully as long as the first three joints: the club of the antennæ is more elongately oval than in *Utula*, and very concave above; the base of these members scarcely furnished with verticillate hairs.

Species.

Much confusion has existed in the synonymy; and Hagen (Hemerob. Synop. Synonym.) has attempted to overcome this by grouping several names as synonyms of one species, *C. surinamensis*; but I believe that all previous writers have failed in identifying the true Fabrician species of that name, and that at least six distinct species exist in collections:—

- ✓ 1. *C. vulpecula*, *Burm.* (*Ascal. vulpecula*, *Burm.*, *op. cit.* p. 1001, ♂.—*A. alopecinus*, *Burm. Handb.* ii. p. 1000, ♀.—*A. surinamensis**, *Guérin*, *Icon.* p. 387, pl. lxii. f. 3, *nec Fab.* ♀.—*C. surinamensis*, *Ramb. Nérop.* p. 360, text, part.—*A. garrulus*, *Walk. Cat. Brit. Mus. Neurotop.* p. 441, ♂.—*A. litigiosus*, *Walk. op. cit.* p. 441, ♀.) Caput thoraxque supra densissime rufescenti-villosa, hic supra macula parva mediana fusca notatus, infra fuscescente-villosus. Antennæ rufofusca; clava vel supra solum, vel omnino, ochracea. Pedes flavidi; tibiis basin versus extus indistincte fusco-semicineticis. Abdomen fusco-nigrum, supra rufo-maculatum. Alæ amplæ, inæquales, pallide

* Baron De Selys Longchamps, in the 'Compte Rendu' of the Meeting of the Société Entomologique de Belgique, held on the 6th May, 1871, adopts "*brasiliensis*," Guérin, for this species; but I cannot admit this name, because Guérin distinctly states in his 'Iconographie' that "*brasiliensis*" was a printer's error for "*surinamensis*," and occurs on the Plate in some copies only; in the text the name is always printed "*surinamensis*."

aureo-tinctæ; venis venulisque rufescentibus vel rufo-fuscis; pterostigmate flavescente: margo analis posticarum in ♂ profunde sinuatus; in ♀ leviter excisus, macula magna, irregulariter triangulari, fusca notatus (interdum parte basali omnino fusco-suffusa). Long. corp. ♂ 15''; ♀ 12''; exp. alar. antic. 37'', postic. 33''.

Hab. Nicaragua to Minas Geraes.

Apparently having a greater range of latitude than the allied species.

- ↓ 2. *C. VILLOSUS*, *Palis. de Beauv.* (*Ascal. villosus*, *P. de Beauv. Ins. Af. et Amer.* p. 86, *Névrop.* pl. vii. fig. 4.) Rufo-villosus. Antennæ fuscae, ad basin rufescentes; clava ochracea. Abdomen fuscum, supra rufo-maculatum. Pedes flavidi. Alæ amplæ, inæquales, fuliginoso-tinctæ; venis venulisque nigricantibus; pterostigmate sordide flavescente: margo analis posticarum in ♂ profunde excisus; in ♀ leviter excisus, macula subquadrata, fusca, notatus. Magnitud. *C. vulpeculae*.
Hab. San Domingo (*P. de B.* in coll. *De Selys*), Demerara (coll. *M'Lach.*).

Certainly distinct from *C. vulpecula*; in the ♂ the anal margin of the posterior wings is more deeply excised and less sinuate than in that species; and the anal spot on these wings in the ♀ is smaller and more quadrate. The coloration of the wings is also different and approaches that in the ♂ of *C. Maclachlani*. Beauvois's type is in De Selys's collection.

3. *C. MACLACHLANI*, *De Selys.* (*Cord. surinamensis*, *Ramb. Névrop.* p. 360, text, part., pl. 9. f. 1 (*nec Fab.*)—*C. Maclachlani**, *Selys, Compt. Rend. Soc. Ent. Belg.* 6 Mai, 1871.) Frons vertexque densissime nigro-villosi. Antennæ nigrae; clava supra rufescens. Thorax supra in medio densissime fulvo-griseo villosus, utrinque et infra nigro-yillosus. Pedes rufo-testacei. Abdomen nigrum. Alæ amplæ, inæquales; in ♂ pallide fusco-tinctæ: margo analis posticarum vix excisus; pterostigmate brunneo, nigro-venato; venis venulisque nigris: anticae in ♀ ut in ♂; posticae ad basin late saturateque nigro-fuscae, ad apicem fusco-suffusae; margo analis leviter excisus. Magnitud. fere ea *C. vulpeculae*.

Hab. Brazil. In De Selys's collection, olim Rambur's.

Var. Paullo minor. Alæ anticae in ♀ ad basin saturatiores; posticae ad basin apicemque late et intense nigro-fuscae, nitidæ.

Hab. Rio Ucayali (*Bartlett*). In my collection.

Rambur has evidently comprised *C. vulpecula* and *Maclachlani*,

* I had intended another name for this species; but after the paper was read I received the monthly 'Compte Rendu' of the Société Ent. de Belgique, in which De Selys, in a note on the species of *Ascalaphi* confounded under the term *surinamensis*, proposes to call it *Maclachlani*. I have no alternative but to accept his proposition.

and probably also *villosus*, in his description (figuring only *Mac-lachlani*) of *surinamensis*.

The variety in my collection from the Ucayali differs especially in the sharply defined *apical*, as well as basal, dark portion of the posterior wings of the ♀.

4. *C. UNICUS*, *Walker*. (*Ascal. unicus*, *Walk. Trans. Ent. Soc. Lond.* ser. 2, vol. v. p. 195.) Frons fusco-villosus. Antennæ rufescentes, nigro-annulatæ; clava nigra. Thorax supra cinereus, utrinque nigro-fuscus. Pedes testacei. Abdomen supra rufescens, infra infuscatum. Alæ anticæ apicem versus angustatæ, hyalinæ, ad basin fusco-tinctæ; maculis duabus, quarum una apicalis, altera parva subapicalis, pterostigmate, venulisque costalibus, fuscis: posticæ elongato-triangulares, peracutæ, omnino fuscæ, macula hyalina parva ad costæ apicem, excepta; margo analis obliquus, leviter excisus. Long. corp. 11''; exp. alar. antic. 32'', postic. 27''.

Hab. Brazil?

√ 5. *C. SUBIRATUS*, *Walker*. (*Ascal. subiratus*, *Walk. Cat. Brit. Mus. Neurop.* p. 439.) Frons nigro-pervillosus. Antennæ rufescentes, nigro-annulatæ; clava ochracea, infra vix infuscata. Thorax supra griseo-ochraceus, utrinque niger; vitta angustata mediana nigra: infra niger. Pedes picei; femoribus pallidioribus. Abdomen nigrum. Alæ anticæ apicem versus paullo angustiores, acutæ, hyalinæ, ad basin fusco-suffusæ; pterostigmate nigro: posticæ hyalinæ, dimidio basali fere, strigisque nonnullis, fuscis; margo analis leviter excisoinuatus. Long. corp. 10''; exp. alar. antic. 28'', postic. 25''.

Hab. Guatemala, Mexico, Honduras, Brazil.

6. *C. SURINAMENSIS*, *Fab.* (*Ascal. surinamensis*, *F. Ent. Syst. Suppl.* p. 207 (*nec auct.*) Caput fulvo-villosum. Antennæ nigræ; clava cehracea. (Thorax fusco-pilosus?) Pedes picei; tarsorum articulis quatuor basalibus fusco-nigris. Abdomen nigro-fuscum, transverse fulvo-maculatum. Alæ paullo latæ, subæquales, hyalinæ; pterostigmate parvo, flavescente: ♀ margo analis posticarum paullo excisus, macula fusca subquadrata ad angulum analem signatus. Long. corp. 11''; exp. alar. antic. 33'', postic. 30''.

Hab. Surinam (*Fabricius*); Brazil, without indication of special locality (*De Selys's collection*).

I have seen one ♀ from De Selys's collection, from which the above diagnosis is drawn up. The colour of the villosity of the head and body is somewhat uncertain, owing to the hairs being matted together by some liquid.

There is no doubt, in my mind, that this is the true Fabrician species; it is the only one to which the description will apply,

especially as regards the words "alæ albæ." The posterior wings are much less broad than in most of the succeeding species; and in this respect it approaches the genus *Ulula*.

√ Genus *ULULA*, *Rambur*.

(Suphalasca, part., *Lefebv.*, *Hag.*)

Wings ordinarily rather broad, scarcely dilated, the margins nearly parallel, a small excision at extreme base of inner margin of anterior pair, not appendiculate: network open; posterior wings without a transverse branch of the lower cubitus, and with the postcosta long and sinuous.

Antennæ as long as, or longer than, the wings, furnished with verticillate hairs at the base; club pyriform, rather short.

Eyes with the upper division rather larger than the lower.

Thorax slightly villose.

Abdomen not so long as the wings, moderately short in the ♂, obese in the ♀; without appendices.

Legs with the spurs of the posterior tibiæ equalling, or slightly exceeding, the first three tarsal joints.

Hab. North, Central, and South America.

This genus approaches the aberrant forms of *Colobopterus* on the one hand, and some forms of *Cordulecerus* on the other. From both it may be separated by the form of the hind wings. In *Cordulecerus* these are more or less excised and sinuate in the anal portion of the inner margin, the shape being somewhat subtriangular; in *Colobopterus* these wings are narrower, especially at the base; in *Ulula* they are gently rounded at this part, though varying much in breadth according to the species.

Species.

I have utterly failed in my attempts to separate the described species, in order to diagnose them anew. Some of them certainly vary immensely, even in the same locality, according to Mr. Bates's observations. On the other hand, I am convinced that several names have been sunk to the rank of synonyms without sufficient reason. Locality doubtless causes much modification; and this is especially noticeable in the West-Indian Islands, each of which possibly possesses what it has become the fashion to call a "Darwinian species" peculiar to it.

√ 1. U. *HYALINA*, *Latreille*. (*Ascal. hyalinus*, *Lat. Humboldt's Recueil*, ii. p. 118, tab. xl. fig. 7; *Hag. N. Amer. Neurop.* p. 238.—A. senex,

Burm. Handb. 1001 (*teste Hagen*).—*U. senex*, *Ramb. Névrolog.* p. 357?
—*A. 4-maculatus*, *Say, Long's Exped.* ii. p. 305.)

Hab. Southern States; West Indies.

I have a series of examples from Texas which I consider to belong to this species. In some of them there is a grey clouding in the apex of the hind wings.

- ✓ 2. *U. AVUNCULUS*, *Hagen*. (*Ascal. avunculus*, *Hag. N. Amer. Neurop.* p. 238.)

Hab. Cuba.

According to *Hagen*, very closely allied to *hyalina*.

- ✓ 3. *U. MACLEAYANA*, *Guilding*. (*Ascal. Macleayanus*, *Guilding, Trans. Linn. Soc.* xiv. p. 140, tab. vii. fig. 11.)

Hab. St. Vincent (*Guilding*).

Merged in *U. hyalina* by *Hagen*. Typical examples are in the Oxford Museum (with larvæ); and these appear to be distinct from the Texan individuals that I consider to be *hyalina*; they are smaller, narrower-winged, and much less robust, though of the same general form. The specimens from Jamaica placed under the name by *Walker* are quite different, and are only forms of his *surinamensis* (*vide infra*), wanting the apical clouding of the hind wings.

- ✓ 4. *U. QUADRIPUNCTATA*, *Burmeister*. (*Ascal. 4-punctatus*, *Burm. Handb.* ii. p. 1001; *Hag. N. Amer. Neurop.* p. 238.—*A. 3-maculatus*, *Lefebv. Guérin's Mag.* 1842.—*A. surinamensis*, *Walk. Cat. Brit. Mus. Neurop.* p. 439 (*nec* *Fab. ? ?*).—*A. Macleayanus*, *Walk. op. cit.* p. 436 (*nec* *Guild. ?*).

Hab. United States; Jamaica??

Walker's surinamensis cannot be a form of *limbata*, as stated by *Hagen* (*N. Amer. Neurop.* p. 239)—according to my ideas, being far too large and broad-winged an insect; but it is scarcely possible that it can be identical with *Burmeister's 4-punctatus*.

- ✓ 5. *U. MICROCEPHALA*, *Rambur*. (*U. microcephala*, *Ramb. Névrolog.* p. 359.)

Hab. Havana; Brazil?

I have examples indicated vaguely as from "Brazil," which seem to agree with *Rambur's* description, the head being certainly much smaller than in allied forms; otherwise they are very close to *Rambur's* type of his *senex*.

6. *U. CAJENNENSIS*, *Fabricius*. (*Ascal. cajennensis*, *Fab. Mant. Ins.* p. 250; *Ent. Syst.* ii. p. 96.)

Hab. Cayenne (*Fabricius*).

Rambur's *senex* may possibly be this species.

7. *U. CHLOROPS*, *Blanchard*. (Ascal. chlorops. *Blanch. Voy. d'Orbigny*, p. 218, tab. xxviii. fig. 8.)

Hab. Bolivia.

Indeterminable.

√ 8. *U. LIMBATA*, *Burmeister*. (Ascal. limbatus, *Burm. Handb.* ii. p. 1001.—*Ulula limbata*, *Ramb. Nérop.* p. 358.—*A. inhonestus*, *Walk. Cat. Brit. Mus. Neurop.* p. 437 (?)—*A. sublugens*, *Walk. Tr. Ent. Soc. Lond.* n. s. vol. v. p. 196 (?))

Hab. Central and South America.

9. *U. VETULA*, *Rambur*. (*Ulula vetula*, *Ramb. Nérop.* p. 358.—Ascal. *subvertens*, *Walk. Cat. Brit. Mus. Neurop.* p. 437.)

Hab. South America.

How far my appreciation of the synonymy of the last two species may be correct remains to be proved. Possibly several good species may be erroneously grouped together under the names; but they vary so much that it is impossible to form a correct opinion without extensive series from many localities.

The three species diagnosed below are very distinct, and undoubtedly new.

† 10. *U. MEXICANA*, nov. sp. Antennæ nigræ, tenuiter flavo-cinctæ; clava nigra, flavido-terminata. Frons vertexque fusco-villosi. Thorax niger, supra rufo-maculatus, infra cinereo-villosus. Pedes picci; tarsi nigro-annulatis. Abdomen nigrum, brunneo-varium. Alæ latæ, ad apicem vix acutæ, vitreæ; pterostigmate nigro-fusco; venis venisque nigris: posticæ macula magna triangulari prope basin marginis interioris, fusca, ornata. Long. corp. 12–13''; exp. alar. antic. 25–29'', postic. 23–27''.

Hab. Mexico. In De Selys's collection and in the Oxford Museum.

Much resembles *Cordulecerus surinamensis*, F. An individual in the Oxford Museum, probably immature, wants the spot on the hind wings.

† 11. *U. AMPLA*, nov. sp. Antennæ flavidæ, tenuiter nigro-cinctæ; clava nigra. Frons flavus, fusco-villosus. Occiput flavum, transverse grisco-strigatum. Thorax rufo-ochraceus, supra fusco-varius, infra cinereo-villosus. Pedes flavi; tarsi nigro annulatis. Abdomen rufo-ochraceum, supra utrinque oblique nigro-strigatum, infra infuscatum. Alæ latæ, in medio dilatatæ, vix acutæ, vitreæ, vel in posticis ad apicem flavido-fumosis, vel omnino fumoso-tinctæ; venis venisque nigris; pterostigmate in anticis flavo, in posticis fuscescente. Long. corp. 13''; exp. alar. antic. 29–33'', postic. 26–30''.

Hab. St. Domingo. In my own collection and in Brit. Mus.

Like the last, this species approaches *Cordulecerus* in its wing-formation. I have examined about half a dozen individuals, which differ only in the presence or absence of tinting of the wings.

12. *U. AURIFERA*, nov. sp. Antennæ nigræ, ad basin flavidæ; clava subtus vix flavescente. Caput thoraxque dense aureo-griscoque villosus. Pedes flavi, griseo nigroque hirsuti; femoribus tibiisque intermediis et posticis fusciscenti-cingulatis. Abdomen flavum, supra utrinque interrupte nigro bivittatum. Alæ angustatæ; pterostigmate flavo: anticæ vitreæ; humeris flavis; venis venulisque plerumque fuscis; subcosta flava, nigro-striata, cubito inferiore, cum ramulo transverso, flavis: posticæ anticis angustiores, vitreæ, aureo-suffusæ; cubito inferiore postcostaque flavidis. Long. corp. 12''; exp. alar. antic. 28'', postic. 26''.

Hab. Santarem (*Bates*). In the British and Oxford Museums.

A pretty species, remarkable for its long and narrow wings, and the delicate golden suffusion, which shows a tendency to invade both pairs, but is most evident on the posterior.

✓ Genus *COLOPTERUS*, *Rambur*.

(*Suphalasca*, part., *Lefebv.*)

Wings long and narrow; the extreme base of the inner margin of the anterior pair with an excision, but not appendiculate; posterior pair ordinarily with a deep excision *before* the base of the inner margin, and then a dilatation, but varying much in form: network moderately open; no oblique branch of the lower cubitus in the posterior wings, the postcosta being long and sinuous; pterostigma small.

Antennæ as long as, or longer than, the wings, more or less provided with verticillate hairs in the basal portion; club long and slender.

Eyes with the divisions equal.

Thorax villose, especially on the breast.

Abdomen rather short, slender in the ♂ and without appendices; more robust in the ♀.

Legs long and slender; spurs of the posterior tibiæ as long as, or longer than, the first four tarsal joints.

Hab. South America.

Species.

Varying considerably in form; distinguished from *Ulula* by the long antennæ and long and narrow wings, which are generally more or less excised at the base of the inner margin; from *Orphne* it differs in the non-appendiculate anterior wings.

1. *C. VERSICOLOR*, *Burmeister*. (*Ascal. versicolor*, *Burm. Handb.* ii. p. 1004.—*C. leptocerus*, *Ramb. Névrolog.* p. 361.—*C. nematocerus*, *Ramb. l. c.*) Antennæ flavæ, pilis verticillatis longis instructæ; apicibus articularum nigris; clava valde elongata, supra flava, infra fuscescente. Frons dense fusco-villosus. Thorax fuscus, supra maculis nonnullis lincisque transversis, infra linea utrinque, flavis ornatus. Pedes pallide flavi; genibus, tibiisque extus (anticis fere omnino) fuscis; tarsis piceo-nigris. Abdomen fuscum, flavo-varium. Alæ vitreæ; venis venulisque nigris; pterostigmate nigro (interdum pallidiores, vix flavido): anticæ in medio paulo dilatato; angulo axillari obsoleto: posticæ ante basin profunde (in ♂ profundius) excisæ, ad basin obtuse dilatatæ. Long. corp. 11–13''; exp. alar. 29–31''.

Apparently common throughout Brazil, especially in the southern districts.

2. *C. SUBRIPIENS*, *Walker*. (*Ascal. subripiens*, *Walk. Cat. Brit. Mus. Névrolog.* p. 443.) Antennæ alis æquales, nigro-fuscæ, pilis verticillatis sparsis basin versus fuscis instructæ; clava perelongata, supra flava. Frons niger, flavo-marginatus, supra fulvo-hirsutus. Occiput fuscum, flavido-lineatum. Thorax niger, maculis flavis ornatus. Pedes pallide albo-flavidi; femoribus tibiisque extus fuscescentibus; tarsis fuscis. Alæ fere ut in *C. versicolori*, sed paulo latiores: anticarum margo interior basin versus longe excisus, angulo axillari prominente: posticarum parte dilatata ad basin parva. Long. corp. 12''; exp. alar. antic. 29'', postic. 26''.

Hab. Venezuela.

Allied to *C. versicolor*, but certainly distinct.

3. *C. DELICATULUS*, nov. sp. Antennæ alis longiores, nigræ, vix ad basin pilis verticillatis instructæ; clava nigra, supra infraque in medio flava. Frons niger, supra fusco-villosus. Occiput piceum. Thorax supra fuscus, in medio flavus, infra albidus. Pedes flavidi, fusco-varii; tarsis nigris. Abdomen fuscum, supra utrinque strigis brevibus ochraceo-marginatis, ornatum. Alæ elongatæ, angustatæ, vitreæ; venis venulis pterostigmateque nigris, hoc magno: anticarum margine interiore basin versus paulo convexo, angulo axillari subacuto: posticæ anticis angustiores, subacutæ, ad apicem fumoso-nebulosæ; margine interiore basin versus leviter exciso. Long. corp. 11''; exp. alar. antic. 27'', postic. 24''.

Hab. Santarem (*Bates*).

4. *C. INTEGER*, nov. sp. Antennæ alis longiores, flavidæ, ad articulorum apices nigræ, basin versus pilis verticillatis paucis instructæ; clava fusca, obscure pallidiore annulata. Frons fuscus, fusco-villosus. Thorax fuscus, supra flavo-maculatus, infra cano villosus. Pedes fuscus; femorum dimidio basali flavo; tarsis nigricantibus. Abdomen fuscum, supra utrinque lineis nigris, ochraceo-marginatis, signatum. Alæ elongatæ, subobtusæ, vitreæ; venis venulisque nigris; pterostigmate nigro-fusco, nigro-venato: posticarum margine interiore ante basin recto, haud exciso, angulo axillari obtuso: posticarum margine interiore basin versus leviter exciso, ad basin vix dilatato. (♀) Long. corp. 11''; exp. alar. antic. 29'', postic. 27''.

Hab. Brazil? In my collection.

Possibly the female of *delicatulus*; but this is only conjecture.

5. *C. SEPULTUS*, Walker. (*Ascal. sepultus*, *Walk. Cat. Brit. Mus. Neurop.* p. 445.) Antennæ alis æquales, fuscæ, ad basin pallidiores, pilis verticillatis vix instructæ; clava fusca, ad basin flava. Frons niger, fusco villosus. Thorax fuscus, infra sparse cano-villosus. Pedes pallide testacei; tibiis extus fusciscentibus; tarsis nigris. Abdomen testaceum, supra fusco-varium. Alæ elongatæ, subobtusæ, vitreæ; venis venulisque nigricantibus; pterostigmate flavo: anticarum margine interiore ante basin leviter exciso, angulo axillari rotundato: posticæ anticis paulo angustiores; margine interiore ante basin longe exciso, ad basin paulo dilatato. Long. corp. 11''; exp. alar. antic. 25'', postic. 22''.

Hab. Brazil.

6. *C. DISSIMILIS*, nov. sp. ♂. Antennæ ante medium flexuosæ, subgeniculatæ, piceo-nigræ; geniculo setis spiniformibus ad articulorum apices intus instructo. Thorax minimus, supra utrinque late fusco-niger, infra plerumque flavidus. Pedes testacei; tibiis extus, tarsisque, fuscis, illis pallido-cinctis. Abdomen fuscum, supra basin versus utrinque lineis nigris, rufescenti-marginatis, notatum. Alæ vitreæ, paulo fumoso-tinctæ; venis venulisque nigris; pterostigmate sordide flavo: anticarum margine postico in medio valde dilatato, ante et pone medium leviter exciso; angulo axillari prominente, obtuso: posticæ valde angustiores; margine postico in medio paulo dilatato, ante basin valde exciso.

♀. Antennæ fere rectæ, pilis haud instructæ. Alæ vitreæ, haud tinctæ; pterostigmate pallidiore, fere albido: anticæ posticæque in medio vix dilatatæ, ante basin marginis postici leviter excisæ. Long. corp. 9-10''; exp. alar. ♂ 17½'', ♀ 21''.

Hab. Amazons (*Bates*).

This curious little species is remarkable for the dissimilarity of form in the sexes, as confirmed by the notes made *in situ* by Mr. Bates. I have seen only one ♂, which is in the Oxford Museum.

√ GENUS ORPHNE, *Lefebvre*.

Wings long, very narrow at the base, afterwards somewhat dilated; anterior pair appendiculate: network rather close; transverse branch of the lower cubitus in the posterior wings not evident, the postcosta not sinuous. The posterior wings differ greatly according to sex: in the ♂ there is a very large obtuse dilatation of the inner margin before the base; in the ♀ this dilatation is absent, and these wings are much narrower.

Antennæ slightly longer than the wings, the base furnished with sparse verticillate hairs; club pyriform.

Eyes with the divisions equal.

Thorax moderately villose.

Abdomen slender in the ♂, slightly more robust in the ♀.

Legs slender, the spurs of the posterior tibiæ equalling the first four tarsal joints.

Hab. South America.

This genus has an evident and great affinity with *Colobopterus*, from which it especially differs in the appendiculate anterior wings and in the great disparity of the form of the posterior wings, according to sex. I consider it to be certainly the genus intended by Lefebvre, as it is the only one that will agree with the characters given by him ("Ailes appendiculées; antennes plus longues que les ailes"). But he was certainly in error in referring his species to *appendiculatus* of Fabricius; and this appears to have misled Hagen, who (Stett. Zeit. 1866, p. 454) makes *Orphne* equivalent to *Haploglenius*.

Species.

1. *O. IMPAVIDA*, Walker. (*Ascal. impavidus*, *Walk. Cat. Brit. Mus. Neurop.* p. 443, ♂.—*A. intemptivus*, *Walk. op. cit.* p. 444, ♀.)

Hab. Amazons.

2. *O. MACROCERCA*, Burmeister. (*Ascal. macrocerus*, *Burm. Handb.* ii. p. 1000.)

Hab. Bahia.

Unknown to me; possibly identical with *O. impavida*. Burmeister's examples were probably females, although he indicates that he had seen both sexes. As I have before stated, the abdomens of the females vary greatly in robustness in the same species in *Ascalaphidæ*.

† Genus *ACMONOTUS*, n. g.

Wings very narrow; the extreme base of the inner margin of the anterior pair with a slight excision, followed by a rather dilated angulation, but not appendiculate: posterior wings still narrower than the anterior, especially in the basal portion; inner margin longly and shallowly excised to the base: transverse branch of the lower cubitus confluent with the postcosta in all the wings; the postcosta rudimentary, scarcely extending beyond the point of junction: network open.

Antennæ much shorter than the wings, straight; club suborbicular.

Eyes with the divisions nearly equal.

Abdomen longer than the wings, slender, gradually attenuated to the apex, provided with a pair of short, slightly divaricate, cylindrical terminal appendices in the ♂; first segment above elevated into an enormous conical hump, the front side of which is straight, the hinder side convex, notched at the apex.

Legs with the spurs nearly equalling the first two tarsal joints.

Hab. West Australia.

A very singular genus, founded on the species described below; the formation of the ♂ abdomen is without a parallel; but it is uncertain if the ♀ presents similar characters, though it is probable that somewhat similar peculiarities are present in that sex also.

Species.

- † 1. *A. INCUSIFER*, nov. sp. Frons cinereo-villosus; clypeo labroque flavis. Vertex fusco-villosus. Antennæ flavo-albidæ, late nigro-annulata; clava infra nigra, supra albo-flava, tenuiter pallide annulata. Thorax niger, maculis tribus elongatis, quarum duæ longitudinales, una transversa postica, rufis, signatus. Pedes rufo-flavi; femoribus (apicibus exceptis), tibiis subtus omnino, supra semicinctis duobus, articularum tarsorum apicibusque, nigris. Abdomen nigrum; infra macula elongata utrinque ad basin, marginibusque posterioribus segmentorum ad latera, rufescentibus: appendices dimidio basali nigro, apicali flavo, nigro tuberculato. Alæ hyalinæ; venis venulis pterostigmateque nigris; humeris flavescentibus (♂). Long. corp. 15''; exp. alar. antic. 26'', postic. 22''.

Hab. West Australia. In Brit. Mus.

√ Genus *SUPHALASCA*, *Lefebvre* (restricted).

Wings elongate, narrow, the costal and inner margins nearly parallel; network rather open; the transverse branch of the

lower cubitus is confluent with the postcosta in all the wings; but in the posterior wings it is scarcely distinguishable from the ordinary veinlets, and its position is only indicated by a slight geniculation of the cubitus: anterior pair with an excision at the extreme base of the inner margin; not appendiculate.

Antennæ much shorter than the wings, nearly straight; club nearly orbicular or truncate.

Eyes with the divisions nearly equal, but varying; sometimes the divisional groove is scarcely evident.

Thorax scarcely villose.

Abdomen moderate (in typical forms); appendices wanting.

Legs with the spurs of the posterior tibiæ about equal to the first tarsal joint (or slightly longer or shorter).

Hab. Australia (typical forms), Polynesia, Malayan archipelago, Africa.

This genus should be restricted to the Australian forms represented by *S. flavipes* and its allies. But I have made it a sort of "refuge for the destitute," and have placed in it several species from Africa, &c., that appear to show more affinity to the typical Australian species than to any other group, so far as can be ascertained from present knowledge, acquired ordinarily from an examination of one sex only. Under *Suphalasca*, Lefebvre included a multitude of discordant forms; and Hagen (Stett. ent. Zeit. 1866, pp. 460, 461) arranges under it (among others) all the American species of Rambur's genus *Ulula*, between which and the Old-World forms there is really no relationship; his character, "postcosta simplici," will not strictly apply to *Suphalasca*, or to any Old-World group.

[See my 'Introductory Remarks' (p. 229) for reasons which induce me to think that the genus *Stilbopteryx* (*Myrmeleonidæ*?) may be related to *Suphalasca*.]

Species.

I arrange the species geographically, as follows:—

Australia.

1. *S. FLAVIPES*, *Leach*. (Ascal. flavipes, *Leach*, *Zool. Misc.* i. p. 48, pl. xx.—*Bubo flavipes*, *Ramb. Névrof.* p. 357.) *Antennæ nigricantes, basi et ante clavam flavæ. Frons flavus, cano-villosus. Vertex nigro-villosus. Thorax flavus, supra utrinque niger, infra nigro-variis.*

Pedes flavi, femoribus (ad apicem exceptis) tarsisque fusco-nigris. Abdomen nigrum, supra linea medianna, lateribus, infra marginibusque posterioribus segmentorum, flavis. Alæ subæquales; humeris, area subcostali, pterostigmateque, flavis; cellulis areæ poststigmatalis triseriatis. Long. corp. 13-14''; exp. alar. antic. 29-35'', postic. 24-29''.

Probably distributed throughout New Holland.

2. *S. IMPORTUNA*, Walker. (Ascal. importunus, Walk. Cat. Brit. Mus. Neurop. p. 427.) *S. flavipedi* valde affinis, sed paullo minor; alis angustioribus, pallide fuliginoso-tinctis.

Hab. Morceton Bay.

Evidently very closely allied to *S. flavipes*, but apparently distinct, in consequence of the narrow and tinted wings. I have seen two individuals precisely similar.

3. *S. SUBTRAHENS*, Walker. (Ascal. subtrahens, Walk. Cat. Brit. Mus. Neurop. p. 430.) Antennæ tenuiores, nigrae, ad basin flavæ; clava flava, infra dimidio apicali nigro. Frons pallide flavus, in medio nigricans, cano-villosus. Vertex nigro-villosus. Occiput flavum, nigro-radiatum. Thorax supra murinus, utrinque niger; infra vel pruinoso-albidus, vel utrinque linea flavida signatus. Pedes nigri; posticis ad femorum apices, intermediis femoribus omnino, anticisque (tarsis exceptis), flavis. Abdomen nigrum, supra vitta dorsali interrupta, aurantiaca, ornatum. Alæ elongatæ, subæquales; humeris flavidis; pterostigmate in anticis pallide brunneo, nigro-venato, in posticis nigro, vel nigro-fusco; area subcostali vix brunneo-tincta; cellulis areæ poststigmatalis irregulariter triseriatis; in serie inferiore magnis, cæteris parvis. Long. corp. 14''; exp. alar. antic. 32''; postic. 28''.

Hab. Australia. I have seen specimens from Rockhampton and from South Australia.

One example in my collection has the apical quarter of the posterior wings faintly tinged with brownish.

4. *S. WILSONI*, nov. sp. Caput, thorax, pedes alæque fere ut in *C. flavipede* (antennæ mutilatæ); venulæ transversæ costales, et infra radium, fusco-marginatæ. Abdomen nigrum, maculis dorsalibus marginibus segmentorum (supra interruptis), infraque ad basin et ad apicem, flavo-ornatum; apex pilis brevibus nigris utrinque vestitus. Long. corp. 14''; exp. alar. antic. 32''; postic. 27''.

Hab. South Australia (*C. A. Wilson*). In my collection.

The wings are rather narrower than in *flavipes*, and the fuscous margining or clouding of the costal and radial nervules gives them a different appearance. The dorsal margin of each abdominal segment appears to have a tendency to expand.

5. *S. DIETRICHIAE*, Brauer. (*Bubo Dietrichiae*, Brauer, *Verh. k.-k. zool.-bot. Gesells. in Wien*, 1869, p. 15.) Antennæ nigræ, ad basin flavæ. Frons pallide flavus, cano-villosus. Vertex niger, nigro-villosus. Occiput flavum, macula crescentiformi nigra ornatum. Thorax supra niger, flavo-maculatus, infra utrinque pruinoso-albidus. Pedes flavi, tarsi ad apices articularum nigri. Abdomen fusco-nigrum, vitta dorsali, punctis lateralibus, lineaque utrinque infra ad basin, flavis, vel aurantiacis, ornatum. Alæ subæquales, sed posticæ anticis angustiores et breviores; humeris flavis; pterostigmate magno, flavo-albido; area poststigmatali pallide brunnea, cellulis triseriatis. Long. corp. 12''; exp. alar. antic. 30'', postic. 27''.

Hab. Rockhampton.

Readily distinguishable from the other Australian species by the brown clouding of the apex of the wings; in the anterior wings this clouding is confined to the poststigmatal costal space, but in the posterior it invades almost the entire apex. The anterior wings are comparatively shorter and broader than in the allied species. I have an individual from the same locality as Brauer's.

6. *S. INCONSPICUA*, nov. sp. (Antennæ mutilatæ.) Frons niger, griseo-villosus. Clypeus labrunque flavi. Vertex niger, nigro-villosus. Occiput nigrum, in medio flavum. Thorax fuscescens, griseo-villosus, supra et infra indistincte piceo-notatus. Pedes nigri, nitentes; femoribus (ad apicem exceptis) rufo-flavis. Abdomen nigrum, nitidum, maculis lanceolatis dorsalibus, in medio, utrinque ad basin, marginibusque posterioribus segmentorum, supra, infra et utrinque interruptis, aurantiacis. Alæ elongatæ, posticæ anticis valde angustiores; humeris flavis; pterostigmate parvo, intense nigro. Long. corp. 12''; exp. alar. antic. 26'', postic. 24''.

Hab. Victoria (*Edwards*). In my collection.

7. *S. SABULOSA*, Walker. (*Ascal. sabulosus*, *Walk. Cat. Brit. Mus. Neurop.* p. 427.) Antennæ nigræ, ad basin flavæ; clava flava, infra dimidio apicali nigricante, tenuiter flavo-cingulato. Frons flavus, in medio niger, densissime griseo-villosus. Thorax niger, griseo-villosus. Pedes nigri; genibus, articuloque ultimo tarsorum, flavis. Abdomen nigrum utrinque alternatim griseo-nigroque hirsutum; supra marginibus posterioribus segmentorum anguste rufo-aurantiacis. Alæ subæquales; humeris flavo-ochraceis; area subcostali infuscata; venis, venulis, pterostigmateque nigris; cellulis areæ poststigmatalis biseriatis. Long. corp. 12''; exp. alar. antic. 30'', postic. 26½''.

Hab. Australia.

8. *S. MAGNA*, nov. sp. *S. sabulosæ* paullo affinis, sed valde major. Abdomen fere glabrum, nigro-fuscum, supra maculis magnis ova-

libus flavidis, ornatum. Vena costali pallide flava : pterostigma angustatum, infuscatum, nigro-venatum ; cellulis aræ poststigmatalis triseriatis. Cæteris ut in *S. sabulosa*. Long. corp. 20'' ; exp. alar. antic. 40'' , postic. 36'' .

Hab. Champion Bay (*Du Boulay*). In my collection and in Brit. Mus.

The largest of the Australian species : the groove marking the divisions of the eyes is only slightly indicated, in fact, is less evident than in any other member of the group *Schizopthalmi* with which I am acquainted.

9. *S. DIFFORMIS*, n. sp. Antennæ nigræ ; dimidio inferiore clavæ flavo. Frons niger, griseo-villosus. Clypeus, labrum, marginesque oculorum flavi. Vertex niger, nigro-villosus. Thorax latus, niger, subtus griseo-villosus. Pedes nigri, tibiis extus flavis. Abdomen nigrum, gradatim attenuatum, infra ad basin flavo-notatum, marginibus posterioribus segmentorum, supra interruptis, apicem versus obsoletis, 2° infra late, flavo-marginatum. Alæ valde inæquales ; posticæ conspicue breviores, prope basin latiores, ad apicem subangulatæ ; humeris sordide flavis ; pterostigmate brunneo, nigro-venato ; cellulis aræ poststigmatalis paucis, magnis, biseriatis. Long. corp. 13'' ; exp. alar. antic. 26'' , postic. 20'' .

Hab. South Australia (*C. A. Wilson*). In my collection.

A peculiarly formed species, the great inequality in the size of the wings and the shape of the body giving it a facies different from the allied forms of the same local group. I believe my example to be a male.

The distribution of the colours of the legs is a good *prima facie* character whereby to separate the Australian species.

Malayan Archipelago.

10. *S. (?) MALAYANA*, nov. sp. Antennæ piceæ, vel piceo-nigræ, ad basin pallidiores ; clava rufo-picea, ad basin nigra. Frons intense nigro-villosus. Thorax supra griseus, utrinque et antice niger ; infra fuscescens, cano pilosus, utrinque late sed indistincte flavo-bistrigatus. Pedes flavidi ; tibiis piceis ; tarsis nigris. Abdomen tenue, supra brunneum, infra basin versus albo-pruinatum. Alæ vitreæ, anticæ posticis valde longiores : sat latæ, paullo in medio dilatatæ ; venis venulisque nigris ; pterostigmate flavido, nigro-venato ; aræ poststigmatalis cellulis biseriatis, paucis, magnis. Long. corp. 18'' (?) ; exp. alar. antic. 31-34'' , postic. 26-28'' .

Hab. Celebes (*Wallace*). In the British Museum.

The extreme apex of the abdomen is broken off in the two specimens I have examined ; both appear to be males. In the

disparity of the size of the wings the species approaches *S. difformis*. The position of the insect is yet doubtful.

New Caledonia.

11. *S. (?) CALEDON*, nov. sp. (Antennæ mutilatæ). Frons fuscus, griseo-villosus, inter antennas nigro-villosus; clypeo, labro, marginibusque oculorum, flavo-ochraceis. Vertex griseo-villosus. Thorax abdomenque supra fusci, infra griseo-pruinosi. Pedes nigri; femoribus piceis. Alæ sat latæ, subæquales, sed posticæ anticis breviores; humeris flavo-fuscis; pterostigmate fusco-nigro; cellulis areæ poststigmatalis triseriatis. Long. corp. 13''; exp. alar. antic. 34'', postic. 30''.

Hab. New Caledonia. In my collection and in that of Baron de Selys Longchamps.

Africa.

12. *S. (?) CEPHALOTES*, nov. sp. Caput, cum oculis, permagnum. Antennæ nigrae, articulo basali ochraceo. Frons fuscus, clypeo, labro, lateribusque flavis. Vertex nigro-villosus. Thorax supra griseo-fuscus, infra utrinque ochraceus, cano-villosus. Pedes nigri; femoribus vix nigro-piceis. Abdomen breve, nigrum, infra utrinque aurantiaco-maculatum. Alæ sat latiores, vix dilatatae; pterostigmate intense nigro: posticæ anticis valde breviores; area costali ad basin paullo gradatim dilatata. Long. corp. 11''; exp. alar. antic. 33'', postic. 25''.

Hab. Madagascar. In my collection.

Seems to be more allied to *S. Caledon* than to the other African species.

13. *S. (?) ABDOMINALIS*, nov. sp. Antennæ piceæ; clava nigra, flavo-annulata. Frons flavidus, nigro-villosus. Vertex nigro-villosus. Occiput sordide flavidum. Thorax supra saturate griseo-ochraceus, antice et in medio nigro-notatus, fusco-villosus, infra pallidior. Pedes nigri; femoribus flavis, ad apicem nigris, prope basin fusco-cingulatis. Abdomen attenuatum, subcylindricum, perelongatum (alis valde longius), nigrum, basin versus sordide ochraceum, fusco-varium, spinis brevibus utrinque dense instructum. Alæ elongatae, angustatae, haud dilatatae; pterostigmate nigro-fusco, nigro-venato; area poststigmatali infuscata. Long. corp. 20''; exp. alar. antic. 32'', postic. 26''.

Hab. Gaboon. One ♂ in my collection.

A second example in the Oxford Museum, perhaps a ♀, differs in the wings being much clouded all over with smoky brown. The underside of the thorax and base of the abdomen is of a pale salmon-colour.

14. S. (?) AFRICANA, nov. sp. (*Bubo festivus*, *Ramb. Névrope*. p. 356, part.) Antennæ nigræ; clava lurida. Frons flavidus, cinereo-villosus. Vertex fusco-villosus. Occiput piceum, in medio nigrum. Thorax supra griseo-fuscus, utrinque niger, griseo-villosus; lineis indistinctis pallidis: infra pallidior, cano-villosus, linea utrinque flavida. Pedes pallide flavidi; tibiis ad basin apicemque et in medio fusco-semicinctis; tarsis nigro-annulatis. Abdomen attenuatum, infuscatum, supra ad basin rubidum, infra ad basin utrinque vitta flava notatum; apice nigro-hirsuto. Alæ vitreæ; pterostigmate pallide brunneo; venis venulisque fuscis. Long. corp. 14''; exp. alar. antic. 27'', postic. 23''.

Hab. Gaboon, Madagascar.

The individual from the Gaboon is in my collection. I cannot separate it specifically from the old specimen, said to be from Madagascar, that is one of Rambur's types of *festivus*. My individual is certainly a ♂, and hence cannot be an *Encyoposis*. It is possible there may exist another African genus, and that in it should be placed *Suphalasca africana*, *Encyoposis rufopictus*, *E. longistigma*, and *E. festivus*.

✓ Genus BUBO, *Rambur*.

Wings elongate, narrow, scarcely dilated; the extreme base of the inner margin of the anterior wings with a semicircular excision, the axillary angle being somewhat produced: transverse branch of the lower cubitus confluent with the postcosta in all the wings.

Antennæ much shorter than the wings, straight; club broadly pyriform, almost truncate.

Eyes with the lower division one-half smaller than the upper.

Thorax villose.

Abdomen short: appendices of the ♂ long, twisted, geniculate, with a process in the middle.

Legs with the spurs of the posterior tibiæ as long as the first two tarsal joints.

Hab. Spain, Syria, Egypt, &c.

Species.

1. B. AGRIOIDES, *Rambur*. (*Ascal. agrioides*, *Ramb. In. Andalus*. pl. ix. fig. 2.—*Bubo agrioides*, *Ramb. Névrope*. p. 353.)

Hab. Spain.

2. B. HAMATUS, *Klug*. (*Ascal. hamatus*, *Klug, Symb. Phys.* iii. tab. xxxvii. fig. 10.—*Bubo hamatus*, *Ramb. Névrope*. p. 354.—*A. forcipatus*, *Eversm. Bull. Mosc.* xxiii. p. 280, tab. v. fig. 4.)

Hab. Egypt, Syria, South Caucasus, Persia.

√ Genus THELEPROCTOPHYLLA *, *Lefebvre*.

Wings rather narrow, slightly dilated in the middle, not appendiculate; the posterior pair much smaller than the anterior: network open: transverse branch of the lower cubitus confluent with the postcosta.

Antennæ one-fourth shorter than the wings, without verticillate hairs in the basal portion; club short and subtriangular: a very dense tuft of hairs between the basal joints and on the face.

Eyes with the lower division one-half smaller than the upper.

Thorax slightly villose.

Abdomen short, in the ♂ furnished with two long, hairy, forcipate, superior appendices, provided internally with a tooth in the middle; and two short and stout, hairy, inferior appendices: in the ♀ with a pair of very large, curved, and foliaceous (deciduous?), membranous, superior appendices, and two very short, hairy, inferior appendices.

Legs with the spurs of the posterior tibiæ about the length of the first tarsal joint.

Hab. Coast of the Mediterranean.

The single and familiar species of this genus bears, in the formation of the eyes and abdominal appendices, and in the shortness of the tibial spurs, characters so trenchant as to preclude the possibility of error.

Species.

1. T. BARBARA, L. (*Myrmeleon barbarum*, *L. Syst. Nat.* ii. p. 914.—*Ascal. barbarus*, *Fab. Syst. Ent.* ii. p. 313.—*A. australis*, *Fab. Mant. Ins.* i. p. 250.—*Th. australis*, *Ramb. Nérop.* p. 351; *Costa, Faun. Nap.* p. 10, tab. vii. fig. 8.—*A. variegatus*, *Klug, Symb. Phys.* iii. tab. xxxvi. fig. 11, var.)

† Genus SIPHLOCERUS, n. g.

Wings elongate, narrow, scarcely dilated, the extreme base of the inner margin of the anterior pair with a slight excision, not appendiculate: network rather close; transverse branch of lower cubitus confluent with the postcosta in all the wings.

* *Lefebvre* writes "*Deleproctophylla*," and professes to derive the first part of the name from "*δηλια (femelle)*," an incomprehensible misreading of *θηλια*. *Rambur* very properly corrected this error.

Antennæ much shorter than the wings; those the ♂ much twisted in the apical half, and subserrate internally in that portion; those of the ♀ nearly straight, and not serrate: club shortly capitate.

Eyes with the lower division much smaller than the upper.

Thorax scarcely villose.

Abdomen moderate: in the ♂ with a pair of short, cylindrical, forcipate appendices, which are strongly spiny within.

Legs with the spurs of the posterior tibiæ about equal to the first two tarsal joints.

Hab. North India.

Allied to *Bubo*; differing in the form of the ♂ antennæ and of the anal appendices.

Species.

1. S. NIMIUS, *Walker*. (*Ascal. nimius*, *Walk. Cat. Brit. Mus. Neurop.* p. 429, ♂.—*A. luctifer*, *Walk. op. cit.* p. 432, ♀.)

† Genus HELICOMITUS, n. g.

Wings as in *Bubo*, but with the axillary angle of anterior pair scarcely evident.

Antennæ shorter than the wings; in the ♂ irregularly sinuous in the basal half; small tufts of hairs on the outer side of the basal portion; club shortly capitate.

Eyes with the lower division one-half smaller than the upper.

Thorax scarcely villose.

Abdomen slender, rather long, and without appendices in the ♂; somewhat short in the ♀.

Legs with the spurs of the posterior tibiæ as long as the first tarsal joint.

Hab. North India, China.

Allied to *Bubo* and *Siphlocerus*; differs from the latter in having no abdominal appendices, and in the form of the ♂ antennæ.

Species.

1. II. INSIMULANS, *Walker*. (*Ascal. insimulans*, *Walk. Cat. Brit. Mus. Neurop.* p. 429, ♂.)

Walker makes no mention of the singular conformation of the antennæ of his type: possibly he considered these organs unnaturally deformed.

2. *H. IMMOTUS*, Walker. (Ascal. immotus, *Cat. Brit. Mus. Neurop.* p. 425.—*A. odiosus*, *Walk. op. cit.* 426.)

3. *H. DICAX*, Walker. (Ascal. dicax, *Walk. Cat. Brit. Mus. Neurop.* p. 423, ♀.—*A. sinister*, *Walk. op. cit.* p. 424, ♀.—*A. procax*, *Walk. op. cit.* p. 425, ♀.)

Walker's so-called species seem to depend upon differences in degrees of maturity.

4. *H. VERBOSUS*, Walker. (Ascal. verbosus, *Walk. Cat. Brit. Mus. Neurop.* p. 426, ♀.)

5. *H. PROFANUS*, Walker. (Ascal. profanus, *Walk. Cat. Brit. Mus. Neurop.* p. 428, ♀.)

This is only a preliminary view of the species of this genus. It is possible that the first three may be only conditions of one.

† Genus ENYOPOISIS, n. g.

Wings elongate, obtuse, little dilated, moderately broad; the inferior pair nearly similar in shape, but shorter and narrower; anterior pair with a semicircular excision at the extreme base of the inner margin, not appendiculate: network open; transverse branch of lower cubitus confluent with the postcosta in all the wings.

Antennæ shorter than the wings; club broad; without verticillate hairs at the base.

Eyes very large; the upper division more than twice the size of the lower.

Thorax slightly villose.

Abdomen (♂) constricted at the base, afterwards very obese, gradually diminishing to the apex; furnished with a pair of long, stout, cylindrical appendices directed downwards, approximated at the base and apex, the latter knobbed and obtuse, directed upwards. (Short and obese in the ♀.)

Legs with the spurs of the posterior tibiæ scarcely so long as the first tarsal joint.

Hab. Africa.

Allied to *Bubo*, but remarkable for the strongly inflated abdomen of the ♂, and differing in the form of the appendices.

Species.

1. *E. FLAVILINEA*, Walker. (Acal. flavilinea, *Walk. Trans. Ent. Soc. Lond. ser. 2. vol. v. p. 197.*) *Antennæ* nigrae, ad basin flavæ. *Frons*

flavo-albidus, cinereo-villosus. Vertex fusco-villosus. Occiput flavo-albidum, supra in medio flavum. Thorax flavus, supra vittis tribus, infra strigis tribus obliquis, nigris, ornatus. Pedes flavi; tarsi nigris. Abdomen supra aurantiacum, vitta utrinque dentata, marginibusque segmentorum, nigris, maculis geminatis flavis; infra ad basin flavum; vitta mediana lanceolata nigra; ♂ appendicibus flavis, spinis brevibus nigris vestitis. Alæ vitreæ; humeris radioque flavis; venarum venularumque cæteris, pterostigmateque, nigris. Long. corp. ♂ cum append. 15", ♀ 14"; exp. alar. antic. ♂ 31", ♀ 38"; postic. ♂ 26", ♀ 34".

Hab. Cape of Good Hope. The ♂ in my collection, the ♀ in that of the British Museum.

2. *E. AMICUS*, nov. sp. Antennæ nigræ, ad basin piceæ. Frons flavus, flavo-villosus. Vertex fusco-villosus. Thorax flavus, supra vittis duabus nigris ornatus; infra flavidum, utrinque fuscescens. Pedes omnino flavi. Abdomen ad basin flavum, utrinque vitta nigra dentata ornatum. Alæ vitreæ; humeris, pterostigmate, subcosta, radio, cubitisque ad basin, flavis, venarum venularumque cæteris nigricantibus. Long. corp. ? (abdomen mutilatum); exp. alar. antic. 34", postic. 29".

Hab. Natal. In De Selys's collection.

Closely allied to *flavilinea*. The single individual appears to be a ♀; but the abdomen wants all but the basal segments.

3. *E. (?) RUFO-PICTUS*, *Walker*. (*Ascal. rufo-pictus*, *Walk. Cat. Brit. Mus. Neurop.* p. 423.) Antennæ paullo flexuosæ, rufæ; clava nigra. Vertex occiputque rufi. Thorax obscure rufescens, infra griseo-villosus. Pedes rufi; tibiis ad basin, tarsisque nigris. Abdomen rufo-griseum, supra maculis utrinque nigris. Alæ fere vitreæ, vix flavido-tinctæ; pterostigmate magno, rufo; venis venulisque flavidis (♀). Long. corp. 15"; exp. alar. antic. 38", postic. 34".

Hab. Sierra Leone (*Morgan*).

I think this species belongs to the genus, though certainty is not obtainable without seeing the ♂.

4. *E. (?) LONGISTIGMA*, nov. sp. Antennæ nigræ vel piceo-nigræ. Frons rufo-ochraceus, aureo-villosus. Thorax sordide ochraceus, fusco-signatus. Pedes nigri; genibus testaceis (♀). Abdomen breve, obesum, fuscum; vitta dorsali ventralique rufo-ochracea, nigro-interrupta. Alæ pallide fulvo-tinctæ; cellulis plurimis saturatiore fulvo pupillatis; pterostigmate perelongato, piceo-nigro; area postigmatali cellulis paucis, magnis, instructa; anticæ in medio paullo dilatato, basin versus gradatim angustiores; posticæ fere dimidio angustiores, subacutæ (♀). Long. corp. 10"; exp. alar. antic. 31", postic. 26".

Hab. White Nile. In my collection.

A decidedly aberrant species; yet, from an examination of the ♀ only, it cannot be located in any other group.

5. E. (?) *FESTIVUS*, *Rambur*. (*Bubo festivus*, *Ramb. Nérop.* p. 356, part.) Antennæ rufescentes vix obscure annulatæ, ad basin flavidæ; clava nigra. Frons occiputque flavi, ille cano-pilosus. Thorax supra niger, vittis tribus, quarum una mediana unaque utrinque, flavis, ornatæ. Pedes omnino flavi. Abdomen flavum, utrinque nigromaculatum fere vittatum, infra vitta mediana nigra signatum. Alæ vitreæ; subcosta radioque flavidis, venarum venularumque cæteris nigricantibus; pterostigmate brunnescente, nigro-venato. Long. corp. 10-12"; exp. alar. antic. 29-30", postic. 24-25".

Hab. Senegal.

This diagnosis has been made from Rambur's Senegal types. Rambur considered he had both sexes. The two Senegal types present very great differences in the form of the abdomen, one having that part small and shrunken, the other very obese. If they be really ♂ and ♀, then the insect cannot be an *Encyopsis*; for the smaller one (♂?) has no appendices. The type from Madagascar is a different species, which I cannot separate from my *Suphalasca* (?) *africana* (vide antè, p. 259).

√ GENUS OGCOGASTER, *Westwood*.

Wings broad, dilated in the middle; the extreme base of the inner margin of the anterior pair with an excision, not appendiculate: network open; branch of the lower cubitus confluent with the postcosta in all the wings.

Antennæ much shorter than the wings, straight, without hairs at the base; club broadly capitate.

Eyes very large; the upper division much larger than the lower.

Thorax slightly villose.

Abdomen shorter than the wings, subcylindrical in the ♂, appendices long and cylindrical, directed downwards and forcipate: strangled at the base, and afterwards very obese in the ♀; with bright and varied markings.

Legs with the spurs of the posterior tibiæ equalling the first tarsal joint.

Hab. India.

The ♂ appears to be scarce: I have only seen that of *O. segmentator*. The ♀ abdomen, although so conspicuously large when gravid, shrinks to a size equal to that of the ♂ when the ova are deposited.

Species.

The two species are sufficiently recognizable from Westwood's description and figures.

1. *O. TESSELLATA*, Westwood. (Ascal. (Ogcog.) tessellatus, West. *Cab. Oriental Ent.* pl. xxxiv. 1.)

Hab. India.

2. *O. SEGMENTATOR*, Westwood. (Ascal. (Ogcog.) segmentator, West. *op. cit.* pl. xxxiv. fig. 2.)

Hab. India.

✓ Genus *ACHERON*, Lefebvre.

(*Hybris*, part., *Hag.*)

Wings elongate, dilated in the middle, especially in the ♀; the extreme base of the inner margin of the anterior pair with an oblique excision, followed by a slight dilatation, but not appendiculate: network rather dense; branch of the lower cubitus confluent with the postcosta in all the wings. Pterostigma large, the apical side extended and very oblique.

Antennæ shorter than the anterior wings, with a slight bend in the basal portion in the ♂, and the apex bent downwards; *denticulate internally at the base*; club broadly pyriform.

Eyes with the upper division rather larger than the lower.

Thorax scarcely villose.

Abdomen very long in the ♂, much longer than the wings; shorter in the ♀, slender and laterally compressed in both sexes; appendices absent.

Legs with the spurs of the posterior tibiæ scarcely longer than the first tarsal joint.

Hab. North India and China.

The ♂ is readily distinguished by the great length of the abdomen, absence of appendices, and the denticulate base of the antennæ; the ♀ is much allied to that of *Hybris*, and is not readily separable therefrom; the broader wings, and longly extended pterostigma of the anterior pair, and the somewhat dilated base of the costal area in the posterior pair, are the most evident characters.

Species.

1. *A. LONGUS*, Walker. (Ascal. longus, *Walk. Cat. Brit. Mus. Neurop.* p. 435, ♂.—*A. trux*, *Walk. op. cit.* p. 432, ♂.—*A. loquax*, *Walk. op. cit.* p. 434, ♀.—*A. anticus*, *Walk. l. c.* ♀.)

Walker's several species appear to me to be all forms or sexes

of one, for which I adopt the name *longus*. The ♂ varies in having the wings either vitreous, or uniformly tinted with pale brown, according to maturity; *trux* is a very immature ♂, with the abdomen mutilated; hence the discrepancy in the length of body. *Loquax* is the ordinary fully mature form of the ♀, the fore wings being strongly margined with brown on the costa, and the hind wings almost uniformly deep golden yellow; *anticus* is less mature, with the wings vitreous and the pterostigma pale. The locality, "Brazil," given for *loquax* by Walker, is a misprint for "Bengal."

√ Genus HYBRIS, *Lefebvre*.

(*Bubo*, part., *Ramb.*, *Hag.*; *Ogcogaster*, part., *West.*)

Wings elongate, considerably dilated in the middle; the extreme base of the inner margin of the anterior wings with an excision, followed by a rather prominent axillary angle, not appendiculate: network rather close; pterostigma large; transverse branch of the lower cubitus confluent with the postcosta in all the wings.

Antennæ as long as the wings; in the ♂ the basal portion is bowed outwardly, afterwards nearly straight, without teeth or hairs; in the ♀ straight: club shortly and broadly pyriform, almost truncate.

Eyes with the upper division rather larger than the lower.

Thorax slightly villose.

Abdomen rather shorter than the anterior wings, laterally compressed in both sexes: in the ♂ furnished with appendices, which are usually rather long, cylindrical, and forcipate, or shorter and somewhat spoon-shaped.

Legs with the spurs of the posterior tibiæ about the length of the first tarsal joint.

Hab. India China, Japan, and the Malay archipelago.

Closely allied to *Acheron*, and also to *Glyptobasis*, notwithstanding the appendiculate wings of the latter genus.

Species.

I am not prepared to give any definite information as to the number of species. All the forms that I have seen present a remarkable similarity in general appearance; yet that there are several species is absolutely certain from the structure of the ♂ appendices, which in *H. angulata* are remarkably dissimilar.

The wings vary much in tinting in different individuals, and certainly independently of species. At present I can separate only three specific forms, as under:—

1. *H. JAVANA*, *Burmeister*. (*Ascal. javanus*, *Burm. Handb.* ii. p. 1001.)
Pedes nigri. Appendices maris breviores, cylindricæ, forcipatæ, ad apicem vix incrassatæ, nigræ, ad basin piceæ, pilis spiniformibus nigris vestitæ.

Hab. Malay archipelago.

2. *H. SUBJACENS*, *Walker*. (*Ascal. subjacens*, *Walk. Cat. Brit. Mus. Neurop.* p. 431 (♀).—*A. remotus*, *Walk. op. cit.* p. 447 (♀).—*Bubo javanus*, *Ramb. Névrolog.* p. 355, nec *Burm.*?) Major. Pedes rufescentes. Appendices maris longiores, cylindricæ, robustæ, forcipatæ, rufescentes, pilis spiniformibus nigris vestitæ.

Hab. China; Japan; Formosa.

Larger than *javana* and separable especially by its reddish legs and the much longer and stronger appendices of the ♂.

Remota is placed in the *Holophthalmi* by Walker; but the type is a much damaged individual (absolutely specifically identical with that of *subjacens*), in which the eyes are mutilated through one division having been removed!

Rambur gives no locality for his *javanus*. Judging from the colour of the legs and appendices, I consider that his species is probably *subjacens*. I have seen individuals of the genus *Hybris* from various islands of the Malay archipelago that I consider to be the true *javana*, and all have black legs and appendices.

3. *H. ANGULATA*, *Westwood*. (*Ascal.* (*Ogeog.*?) *angulatus*, *Westwood, Cab. Or. Ent.*—*Ascal. accusans*, *Walk. Cat. Brit. Mus. Neurop.* p. 431.) Magnitud. *H. subjacentis*. Alæ latiores. Pedes piceo-nigri. Appendices maris breves, haud forcipatæ, intus concavæ, rufæ, ad apicem spinis brevibus nigris dense instructæ.

Hab. Assam; Silhet.

A broader-winged insect with very differently formed appendices. The colour of the dorsum of the abdomen is of a much brighter red than in the allied species.

4. *H. (?) CERVINA*, *Hagen*. (*Ascal. cervinus*, *Hag. Verh. zool.-bot. Gesell. in Wien*, 1858, p. 481.)

Hab. Ceylon.

Unknown to me. It might be a *Glyptobasis*, only that Hagen in describing the wings says, "margine anteriorum basali anguloso," which will scarcely apply to the appendiculate wings of that genus.

‡ Genus GLYPTOBASIS, n. g.

(Ogcogaster, part., *Westwd., Hag.*)

Wings elongate, much dilated in the middle, narrow at the base; network rather close; branch of the lower cubitus confluent with the postcosta in all the wings: anterior pair appendiculate.

Antennæ rather shorter than the wings; in the ♂ slightly bent at the base, and in that portion each joint is furnished with a small sharp tooth or spine; club in the form of a short truncate cone.

Eyes with the upper division rather larger than the lower.

Thorax slightly villose.

Abdomen rather shorter than the wings, marked with bright colours; that of the ♂ slender, with a pair of claw-shaped corneous appendices; more robust in the ♀.

Legs with the spurs of the posterior tibiæ nearly equalling the first two tarsal joints.

Hab. India.

Species.

I am unable to diagnose the forms in an intelligible manner. It is evident that several species exist, presenting special characters in the appendices of the ♂, independently of general peculiarities. As in several other genera, the males seem to be much rarer than the females, or their habits cause them to be less frequently captured; hence much difficulty arises. The following separation of described species will probably be found tolerably correct. The wings, as in *Acheron* and *Hybris*, certainly acquire an amount of tinting varying according to the maturity of the individual.

1. G. DENTIFERA, *Westwood*. (Ascal. (Ogcog.) dentifer, *West. Cab. Or. Ent.*)

I possess several examples from Bombay that are certainly referable to this species.

2. G. INCUSANS, *Walker*. (Ascal. incusans, *Walk. Cat. Brit. Mus. Neurop.* p. 442, ♂.—A. nugax, *Walk. op. cit.* p. 433, ♀?)

Hab. Ceylon.

G. incusans is certainly distinct from *dentifera*. That *nugax* may be the female of it is probable from the similarity of locality.

† Genus NEPHONEURA, n. g.

(Proctarrelabris, part. *Lefebv.*?)

Wings elongate and rather broad; anterior pair narrow at the base and appendiculate; posterior pair longly and shallowly excised on the inner margin: network moderately dense; branch of the lower cubitus in the posterior wings confluent with the postcosta.

Antennæ considerably shorter than the anterior wings, strong, straight, the base furnished with verticillate hairs; club shortly and broadly pyriform, almost truncate; a dense tuft of hairs on the face and between the antennæ.

Eyes with the divisions nearly equal.

Thorax robust, slightly villose above and densely so on the breast.

Abdomen shorter than the wings; in the ♂ furnished with long, forcipate, terminal, simple appendices.

Legs with the spurs of the posterior tibiæ scarcely exceeding the first tarsal joint.

Hab. South Africa.

Species.

1. *N. CAPENSIS*, *Fab.* (*Ascal. capensis*, *F. Spec. Ins.* i. p. 400; *Ent. Syst.* ii. p. 96.) Frons vertexque dense cinereo-brunneoque pilosi. Antennæ rufæ, pallido annulatæ; clava nigra. Thorax fusco-testaceoque varius; infra linea utrinque albida. Pedes rufo-picei; tibiis ad basim apicemque, et in medio, flavo-semicinctis. Abdomen fuscum; marginibus posticis segmentorum, supraque maculis obliquis, nigris. Appendicibus ♂ rufescentibus, intus breviter nigro-spinosis. Alæ hyalinæ, longitudinaliter brunneo-strigatæ; maculis in area subcostali, marginibusque venularum costalium, rosaceis; venis principalibus rufescentibus, venulis nigris, plerumque brunneo-nebulosis vel marginatis; pterostigmate rufescente. Long. corp. 13"; exp. alar. antic. 32", postic. 27".

Hab. Cape of Good Hope. In my collection and in Brit. Mus.

This is certainly the true Fabrician *capensis*, according to the type in the Banksian Collection now in the British Museum. Fabricius does not mention the appendiculate wings, and his description fails to indicate the rosy markings; but the description was drawn up from an unexpanded example.

2. *N. COLLUSOR*, nov. sp. *N. capensi* affinis, differt alis haud strigatis, venulis (costalibus exceptis) haud marginatis; maculis subcostalibus plus infuscatis; tibiis extus dimidio basali flavido, vix interrupto:

alæ posticæ ♀ nebula magna paullo ante apicem fusco-testacea, ornata.

Hab. Cape of Good Hope. In my collection and in Brit. Mus.

√ Genus PROCTARRELABRIS, *Lefebvre* (restricted).

(*Bubo*, part., *Rambur*, *Hag.*)

Wings rather broad; anterior pair with a small concave excision at the extreme base of the inner margin, followed by a slight dilatation, but not appendiculate: network open; branch of the lower cubitus in the posterior wing confluent with the postcosta.

Antennæ rather shorter than the anterior wings, strong, nearly straight, the base furnished with verticillate hairs; club short and capitate; a dense tuft of hairs on the face and between the antennæ.

Eyes with the divisions equal.

Thorax robust, densely villose, especially on the breast.

Abdomen slender in the ♂, and furnished with long and slender, forcipate, simple, terminal appendices; shorter and very obese in the ♀.

Legs with the posterior tibiæ nearly equalling the first two tarsal joints.

Hab. South Africa.

Species.

1. P. ANNULICORNIS, *Burmeister*. (*Ascal. annulicornis*, *Burm. Handb.* ii. p. 1001.—*Myrmeleon capense*, *Thunbg. Nov. Act. Holm.*—*Ascal. capensis*, *Burm. op. cit.* p. 1002 (nec *Fab.*).—*P. capensis*, *Lefebv. Guérin's Mag.* 1842.—*Bubo capensis*, *Ramb. Nérop.* p. 854.—*Ascal. involvens*, *Walk. Cat. Brit. Mus. Neurop.* p. 422 (♀).)

Hab. South Africa.

This is the species that has been universally mistaken for the true *capensis* of Fabricius. I adopt Burmeister's name, though it is hardly applicable, as the antennæ are scarcely "annulate." It is, I think, also certainly Thunberg's *capensis*; his name is independent of that of Fabricius. It appears to be a common South-African species, and varies much in size and otherwise. The following conditions are known to me:—

1. Alæ fere vitreæ, ♂, ♀.
2. Alæ uniformiter pallide brunneo tinctæ, ♂.
3. Alæ posticæ nebula magna ante apicem, fuliginosa, ornata, ♀ (= *involvens*, Walker).
4. Alæ posticæ fere uniformiter pallide fuliginoso-suffusæ, ♀.

A note, in the handwriting of M. Guenzius, attached to an example from Natal in the British Museum, gives the following information respecting the habits of the species:—"Hides by day in the fissures of the bark of old trees, with the body curved upwards; difficult to find. In the morning and evening twilight it chases insects, dragonfly-like, around branches of trees."

† Genus *HELCOPTERYX*, n. g.

(*Bubo*, part., *Ramb.*, *Hag.*)

Wings elongate, rather narrow towards the base, the extreme base of the inner margin with a small excision followed by a slight dilatation, but not appendiculate; network dense; branch of the lower cubitus confluent with the postcosta in the posterior wings.

Antennæ considerably shorter than the wings, straight, the base furnished with verticillate hairs; club nearly roundly capitate; a dense tuft of hairs on the face and between the antennæ.

Eyes small; the divisions nearly equal.

Thorax robust, villose, especially on the breast.

Abdomen of the ♂ slender, as long as the anterior wings, the three terminal segments furnished with a narrow wing-like dilatation of the lateral margins, gradually becoming broader to the apex, which is furnished with short, straight and cylindrical divergent appendices; the second segment is dilated above into a hump posteriorly, giving the abdomen the appearance of being geniculate. In the ♀ the abdomen is simple, rather obese, excepting at the apex.

Legs with the spurs of the posterior tibiæ about the length of the first two tarsal joints.

Hab. South Africa.

Species.

1. II. *RHODIOGRAMMA*, *Rambur.* (*Bubo rhodiogrammus*, *Ramb. Néorop.* p. 355)

Hab. Cape of Good Hope; Natal.

Rambur's description is sufficiently precise, only that his type was a female. In the ♂ I do not see the "taches en forme de fer-à-cheval, d'un noir velouté" of which he speaks. The ♂ abdomen in two examples in my collection is uniformly fuscous, somewhat reddish above towards the base, and with a tendency to become pruinose beneath; the hump on the second segment is

beset with short black spine-like hairs; the wing-like lateral dilations of the three terminal segments are reddish brown; from the last segment beneath projects a triangular valve; the appendices brown, furnished with tufts of black hairs at the tips.

√ Genus *PUER*, *Lefebvre*.

Wings elongately subtriangular; costal margin not dilated at the base: network very open; transverse branch of the lower cubitus confluent with the postcosta in all the wings: posterior wings very much shorter than the anterior.

Antennæ shorter than the wings, nearly straight, simple; club very broad; face very densely villose.

Eyes having the upper division more than twice as large as the lower.

Thorax slightly villose above, more densely so on the breast.

Abdomen with dense tufts of hairs along the sides; ♂ without appendices: very short and broad in the ♀.

Legs with the spurs of the posterior tibiæ much shorter than the first tarsal joint.

Hab. South of France.

Species.

1. *P. MACULATUS*, *Olivier*. (*Ascal. maculatus*, *Oliv. Encyc. Méthod.* i. p. 246.—*P. maculatus*, *Ramb. Nérop.* p. 352, pl. ix. fig. 2.—*A. niger*, *Borkh. Scrib. Beitr.* ii. p. 156, tab. xi. fig. 2; *Burm. Handb.* ii. p. 1002.)

This beautiful insect seems to be confined to Provence and the neighbouring districts.

I know not for what reason Hagen (*Stett. Zeit.* 1860, p. 53) has deposed Olivier's name in favour of Borkhausen's; the former was published at least two years *before* the latter, and the description is quite satisfactory.

+ Genus *ASCALAPHODES*, n. g.

Allied to *Puer*. In the ♂ the antennæ have each joint internally, excepting those towards the apex, provided with a sharp, back-directed tooth; and the abdomen has a pair of short very stout appendices, the tips of which are thickened and approximate; the hairs of the abdomen are not arranged in tufts.

Hab. India.

Species.

1. *A. CANIFRONS*, *Westwood*. (*Ascal. (Bubo) canifrons*, *Westw. Cab. Or. Ent.* pl. xxxiv. fig. 3.)

Westwood's type is a ♀. A ♂ in the British Museum is much smaller (exp. alar. antic. 13^{'''}), in fact the least of all the Ascalaphidæ; the posterior wings have the basal third opaque white, showing the affinity of the genus to *Ascalaphus* (restricted).

√ Genus ASCALAPHUS, *Fab.* (restricted).

Wings subtriangular, with yellow or white and black (often opaque) markings; costal margin dilated at the base, afterwards constricted; network very close: transverse branch of lower cubitus running obliquely into the inner margin, after the termination of the postcosta, in all the wings.

Antennæ strong, as long as the wings (or slightly longer or shorter), without hairs at the base; somewhat arcuate at the base, especially in the ♂: club short and broad, almost truncate: a dense tuft of hairs between the antennæ and on the face.

Eyes having the superior division much larger than the inferior.

Thorax villose.

Abdomen short and densely villose, obese in the ♀; in the ♂ with a pair of slender, cylindrical, forcipate terminal appendices.

Legs very short, with the spurs of the posterior tibiæ scarcely so long as the first tarsal joint.

Hab. Mediterranean district; extending into Central Europe and Siberia.

The striking and papilioniform species of this genus are familiar to every entomologist.

Species.

I content myself here by enumerating the species according to Hagen's list in the 'Stettiner entomolog. Zeitung' for 1860, pp. 47, 48, without reproducing the complicated synonymy he there elucidates, and which I have not yet tested. However, I have united *corsicus* and *siculus* of Rambur, not being able to find any character whatever, after an examination of the type specimens, by which to distinguish them. The species appear to separate themselves into two ill-defined groups, characterized by the presence or absence of opaque coloration of the wings: many of them are closely related one to another, and seem to thoroughly confirm my opinion expressed in the introductory portion of this paper, that local influences tend to produce modifications or "local species" in the Ascalaphidæ.

Hagen recognizes the following, most of which I have seen :—

1. *A. MACARONIUS*, Scop. (*Ent. Carn.* p. 168, fig. 446; *Papilio*!)
Hab. Austria, Dalmatia, Hungary, Turkey, Russia.
2. *A. KOLYVANENSIS*, Laxmann (*Nov. Comment. Acad. Petrop.* xiv. p. 599, tab. xxv. fig. 9).
Hab. Russia, Asia Minor, Turkey, Greece, Hungary, Dalmatia, &c.
3. *A. PUPILLATUS*, Ramb. (*Névrope.* p. 346, pl. x. fig. 7).
Hab. South Russia and Hungary.
4. *A. LONGICORNIS*, Linn. (*Mus. Lud. Ulr.* p. 402).
Hab. France (extending northwards to Paris), Spain, Algiers, Italy, &c.
5. *A. RHOMBOIDEUS*, Schneider (*Stett. ent. Zeit.* 1845, p. 153).
Hab. Rhodes, Hungary.
6. *A. COCCAJUS*, Wiener Verzeichniss, p. 187 (*Papilio*!).
Hab. Germany (extending northwards to Thuringia); Switzerland; France, Spain, Italy, Greece.
7. *A. BÆTICUS*, Ramb. (*Névrope.* p. 345).
Hab. Andalusia.
8. *A. LACTEUS*, Brullé (*Exp. Morée*, p. 278, tab. xxxii. fig. 3).
Hab. Greece, Turkey, Asia Minor, Dalmatia, Italy, South Russia.
9. *A. ITALICUS*, Fab. (*Spec. Ins.* p. 400).
Hab. Italy, Sicily.
10. *A. SIBIRICUS*, Eversm. (*Bull. Moscou*, xxiii. p. 279, tab. v. fig. 2).
Hab. Kiachta, Mongolia.
11. *A. ICTERICUS*, Charp. (*Hor. Ent.* p. 59).
Hab. South France, Portugal, Spain, Algiers, Barbary, Italy, Sicily, Greece.
12. *A. HISPANICUS*, Ramb. (*Névrope.* p. 350, pl. ix. fig. 4).
Hab. Spain.
13. *A. USTULATUS*, Eversm. (*Bull. Moscou*, xxiii. p. 278, tab. v. fig. 4).
Hab. South Caucasus.
14. *A. CORSICUS*, Ramb. (*Névrope.* p. 349, pl. xi. fig. 3), = *siculus*, Rbr.
Hab. Corsica, Sardinia, Sicily, Greece.
15. *A. SYRIACUS*, nov. sp. Antennæ nigræ. Frons griseo-villosus. Vertex nigro-villosus. Thorax niger, supra aurantiaco-sexmaculatus, infra flavo-maculatus. Pedes flavi; femorum dimidio basali, tibiis ad apicem, tarsisque nigris. Abdomen nigrum. Alæ anticæ hyalinæ, nitidæ; parte tertia basali lactea, extus convexa; macula ad basin nigro-fusca; venis venulisque plerumque albis vel flavidis, cubito superiore

nigro; pterostigmate lacteo: posticæ fere æqualiter tricoloratæ, nitidæ, ad basin nigro-fuscæ, in medio lactæ, pallide venatæ; ad apicem omnium fuliginosæ, nigro-venatæ; pterostigmate fusco (♂). Long. corp. 9''; exp. alar. antic. 18''.

Hab. Syria (Huleh, Lowne).

Of the group of *A. lacteus*, Brullé, but very distinct from any described species; the uniformly fuliginous apical third of the posterior wings is especially characteristic; this colour is somewhat irregular within, and is carried as a narrow and gradually diminishing line some little distance along the inner margin.

INDEX TO SPECIES.

The names *in italics* indicate synonyms: the other names are those that I consider should be applied to the species; but some of these it is not possible to identify, and they are merely cited as guides to future workers.

N.B. The names of the species of the genus *Ascalaphus* (*sensu stricto*), and their synonyms, are not included in this index (*cf. antè*, p. 273). Neither is any notice taken of the numerous Catalogue and Museum names cited by Hagen ('*Hemer. Synop. Synonymica*'), it being considered that the perpetuation of such names is not only useless, but also pernicious.

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<i>javana, Burm.</i>	267	<i>sinister, Walk.</i>	262
<i>javanus, Ramb.</i>	267	<i>subcostatus, Burm.</i>	236
<i>juvenilis, n. sp.</i>	239	<i>subiratus, Walk.</i>	245
<i>lacerata, Hag.</i>	242	<i>subjacens, Walk.</i>	267
<i>leucostigma, Walk.</i>	235	<i>sublugens, Walk.</i>	248
<i>leptocerus, Ramb.</i>	250	<i>subripiens, Walk.</i>	250
<i>limbata, Burm.</i>	248	<i>subtrahens, Walk.</i>	255
<i>litigiosus, Walk.</i>	243	<i>subvertens, Walk.</i>	248
<i>longistigma, n. sp.</i>	263	<i>surinamensis, F.</i>	245
<i>longus, Walk.</i>	265	<i>surinamensis, Guér., Ramb.,</i>	243, 244
<i>loquax, Walk.</i>	265	<i>surinamensis, Walk.</i>	247
<i>luctifer, Walk.</i>	261	<i>terminalis, n. sp.</i>	235
<i>luteus, Walk.</i>	234	<i>tessellata, Westw.</i>	265
<i>Maclachlani, Selys</i>	244	<i>trimaculatus, Lefebv.</i>	247
<i>Macleayana, Guild.</i>	247	<i>trux, Walk.</i>	265
<i>Macleayanus, Walk.</i>	247	<i>unicus, Walk.</i>	245
<i>macrocerca, Burm.</i>	252	<i>variegatus, Klug.</i>	260
<i>maculatus, Oliv.</i>	272	<i>verbosus, Walk.</i>	262
<i>magna, n. sp.</i>	256	<i>versicolor, Burm.</i>	250
<i>malayana, n. sp.</i>	257	<i>vetula, Ramb.</i>	248
<i>mexicana, n. sp.</i>	248	<i>villosus, Beauv.</i>	244
<i>microcephala, Ramb.</i>	247	<i>vulpecula, Burm.</i>	243
<i>microcerus, Ramb.</i>	235	<i>Wilsoni, n. sp.</i>	255
<i>nematocerus, Ramb.</i>	250		
<i>niger, Borkh.</i>	272		

Notes on the Geographical Distribution and Dispersion of Insects ; chiefly in reference to a Paper by MR. ANDREW MURRAY, F.L.S., "On the Geographical Relations of the Chief Coleopterous Faunæ" (Journ. Linn. Soc. vol. xi. (Zoology), No. 49.). By ROLAND TRIMEN, F.L.S., F.Z.S., M.E.S.

[Read April 20, 1871.]

HAVING attentively perused the above-mentioned treatise, I think that the following notes may perhaps be useful. I must